IMPORTANT SAFETY NOTICE

Proper service and repair is important to the safe, reliable operation of all NAPCEC Equipment. The service procedures recommended by NAPCEC and described in this service manual are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It also is important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. NAPCEC could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, NAPCEC has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by NAPCEC must first satisfy himself thoroughly that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

WARNING

Critical components having special safety characteristics are identified with an S by the Ref. No. in the parts list and enclosed within a broken line* along with the safety symbol ⚠ on the schematics or exploded views.

Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from the N.A.P. Consumer Electronics Corp. NAPCEC assumes no liability, express or implied, arising out of any unauthorized modification of design. Servicer assumes all liability.

* Broken line: — · — · — · — ·

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SPECIFICATIONS

CRT size	13 inch diagonal
CRT Deflection Angle	90 degrees
CRT Mask Pitch:	
-8CM505/CM8505/CM8705	0.65mm
-8CM515/8CM542/CM8562/CM8762	0.42mm
-8CM643	0.39mm
CRT Light Transmission:	
-CM8505/CM8705	56%
-8CM505/8CM515/8CM643	46%
-8CM542/CM8562/CM8762	46%
Power Requirements	115Vac/60Hz
Power Consumption	75W max.
Degaussing	Automatic (when switching on set)
Video Input Signals:	
CM8505/CM8705/8CM505/8CM515/8CM643	RGB anolog 0.7, composite sync, 6 pin connector
Composite video	1Vp-p, negative sync, RCA connector
	RGB-1 TTL, separate horiz. and vert. sync, 8 pin connector
Horizontal Scanning Frequency	15734Hz
Horizontal Frequency Drift	1 % max.
Horizontal Flyback Time	12uS max.
Horizontal Blanking Time	12uS max.
Vertical Scanning Frequency	47-62.5Hz
Vertical Frequency Drift	1% max.
Vertical Flyback Time	0.95mS max.
Vertical Blanking Time	(21H) 1.33mS
RGB Amp Bandwidth	8MHz min.
RGB Amp Bandwidth (8CM643)	15MHz min.
Resolution:	
-Vertical	240 lines
-CM8505/CM8705 Horizontal	390 dots
-8CM505 Horizontal	390 dots
-8CM515/CM8562 Horizontal	640 dots
-8CM542/8CM643	690 dots
Character Display:	
-CM8505/CM8705	1000 characters (40 x 25)
-8CM505	1600 characters (64 x 25)
-8CM515/8CM542/CM8562/CM8762/8CM643	2000 characters (80 x 25)
Overshoot/Undershoot	5% max.
Black Level Shift	3% max.
Audio Input Signal	150mV eff.
Audio Input Impedance	10k
Audio Output Power	1W a 5% distortion
Audio Frequency Range	300Hz - 7kHz
Audio S/N Ratio	40dB min.
Operating Humidity Range	less than 80%
Dimensions (HxWxD)	320x350x387mm

* Specifications subject to change without notice.

ADJUSTMENT PROCEDURES

Adjustment Notes:
unless otherwise specified:
1. An isolation transformer must be used when servicing this unit.
2. Line voltage maintained at 120Vac, 60Hz.
3. The unit should be allowed to warm up for at least 30 minutes prior to making any adjustments.
4. Voltages measured with repect to ground.
5. Signal injection point is the Video In Jack.

R496 Pincushion Adjustment (8CM643 only)
1. Inject a cross-hatch pattern and set Brightness Control (R598) and Contract Control (R585) to their mechanical centers.
2. Adjust R496 so that 14 blocks correspond to a width of 26cm.
3. Horizontal Amplitude and Centering Adjustment
4. Vertical Amplitude and Centering Adjustment

R598 Sub-Brightness Control Adjustment (8CM643 only)
(Dual Trace Oscilloscope required)
1. Inject a signal with a white raster to input connector.
2. Adjust G2 (R727) and Contrast Control to minimum. Adjust Brightness Control to mechanical center.
3. Connect a DC coupled probe from Channel A of the oscilloscope to pin 1 of IC502.
4. Connect a DC coupled probe from Channel B of the oscilloscope to the emitter of TS641.
5. Adjust the Sub-Brightness (R598) to place the top of the video Signal (Channel A) at the same voltage level as the emitter of TS641 (Channel B).
6. Adjust Red (R705), Green (R705) and Blue (R706) cut off controls to set pins 6, 8, and 11 of Picture Tube at 100 volts each.
7. Advance G2 control (R727) until screen just begins to illuminate.
8. If the electron guns of the CRT are balanced, you should get a dull gray raster. However, if one color is more predominant than the others, adjust the cut-off controls of other 2 corresponding guns as required to obtain a gray raster.

Power Supply Adjustment
1. With the unit off, set the Volume Control (R316), Contrast Control (R585), and Brightness Control (R589) to minimum.
2. Preset R114 to mechanical center.
3. Connect a voltmeter across C494 and turn on the unit.
4. Adjust R114 for a reading of 125V on the meter.

Horizontal Synchronization Adjustment
1. Inject a cross-hatch pattern signal and short C434.
2. Adjust the horizontal sync with R437.
3. Remove the short from C434.

Vertical Synchronization Adjustment
1. Inject a cross-hatch pattern signal and short C434.
2. Adjust the vertical sync with R331.
3. Remove the short C434.

Horizontal Amplitude and Centering Adjustment
1. Inject a cross-hatch pattern signal and set the Brightness Control (R589) and Contrast Control (R585) to their mechanical centers.
2. Adjust R485 so that 14 blocks correspond to a width of 26cm.
3. Adjust R453 to center display horizontally.

Vertical Amplitude and Centering Adjustment
1. Inject a cross-hatch pattern and set the Brightness Control (R585) to their mechanical centers.
2. Adjust R353 so that 10 blocks correspond to a height of 18.5cm.
3. Adjust R364 to center the display vertically.

Chrominance Adjustment
(Note: pin nos. in parenthesis indicate alternate 16-pin IC.)
1. Inject a color bar pattern signal and adjust the secondary controls for normal viewing. Place SK3 (not used in CM8562, CM8762, 8CM542) in the off position.
2. Connect an oscilloscope to pin 15 of IC502 and adjust S533 for minimum amplitude of the chrominance signal that is presrnt on the various brightness steps of the luminance signal.
3. Short pins 9 (3) and 17 (11) of IC501.
4. Adjust C567 to minimize the chroma as visible on the screen.
5. Remove the shorting clips from pins.

Comb Filter Adjustment
(CM8505/CM8705/8CM505/8CM515/8CM643 ONLY)
1. Inject a color bar pattern signal and place the Comb Filter Switch (SK3 in the on position).
2. Connect an oscilloscope to the emitter of TS531 and adjust R523 and S515 for minimum amplitude of the chrominance signal. For optimum performance, repeat the adjustment.

Focus Adjustment
1. Inject a cross-hatch pattern signal and set the Brightness Control (R589) to minimum and the Contrast control (R585) to maximum.
2. Adjust R732 for optimum focus.

X-Ray Protection Circuit Adjustment
1. Inject a color bar pattern signal and set the Brightness and Contrast Controls to minimum.
2. Connect a voltmeter between the wiper of R457 and ground.
3. Adjust R457 for a reading of 6.9V.

Note: The following adjustments need only be performed if the CRT has been replaced. Minor correction for purity and convergence may be accomplished through the use of the Purity and Convergence Assembly located on the neck of the CRT.

Color Purity Adjustment (Refer to Figure 1)
1. Loosen the yoke clamp screw and slide the yoke back away from the rubber wedges.
2. Remove the rubber wedges (G) and slide the yoke forward until it rests firmly against the bell of the CRT.
3. Tighten the yoke clamp screw slightly so that the yoke can still be moved with some friction.
4. Place the multi-pole Purity and Convergence Assembly in the position shown in Figure 1.
5. Tighten screw (A) and turn securing ring (B) counter-clockwise. Position the unit so that it faces in an East/West direction and degauss the instrument.
6. Turn on the power and inject a cross-hatch pattern signal. Allow a 10 minute warm-up period.
7. Roughly adjust the static convergence, using tabs C and D.
8. Set the Vertical Centering Control (R364) to its mechanical center. Disconnect R723 and R724 to turn off the green and blue guns.

9. Adjust the two-pole purity rings (E) to center the red vertical and horizontal lines.
10. Inject a white pattern signal and move the deflection yoke to obtain a full red raster.
11. Turn on the green and blue guns by reconnecting R723 and R724. If a uniformly white raster does not appear, minor adjustments may be made by adjusting the purity rings (E).
12. Inject a cross-hatch pattern signal to ensure that the yoke is not tilted. If necessary, rotate the yoke to obtain a level raster.
13. Tighten screw F and adjust R364 for proper vertical centering. Proceed to the Static Convergence Adjustment.

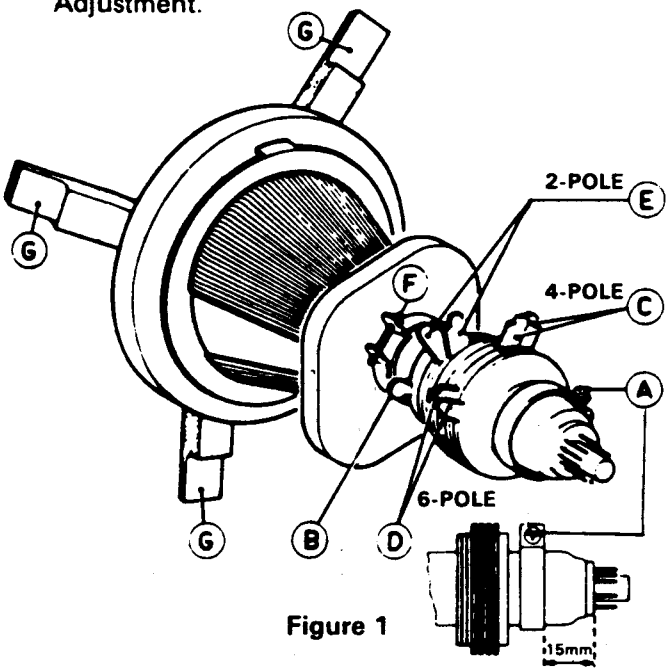

Figure 1

Static Convergence Adjustment

1. Inject a crosshatch pattern signal and allow a 10 minute warm-up period.
2. Turn off the green gun by disconnecting R723. Turn locking ring (B) counterclockwise.
3. Slowly spread, and if necessary, rotate the 4-pole magnetic rings (C) to converge red and blue lines at the center of the screen.
4. Reconnect R723 to turn on the green gun and disconnect R724 to turn off the blue gun.
5. Slowly spread, and if necessary, rotate the 6-pole magnetic rings (D) to converge the red and green lines at the center of the screen.
6. Reconnect R724 to turn on the blue gun.
7. For optimum performance, repeat steps 1 through 6. Proceed to the Dynamic Convergence Adjustment.

Dynamic Convergence Adjustment

1. Inject a cross-hatch pattern signal and turn off the green gun by disconnecting R723.
2. Tilt the yoke up and down to acheive the best convergence of the red and blue vertical lines at the 6 and 12 o'clock and the red and blue horizontal lines at the 3 and 9 o'clock positions (see Figure 2).
3. When the correct position has been found, place a rubber wedge between the CRT. If the yoke is tilted up, place wedge 1 as shown in Figure 3a; if it is tilted down, place wedge 1 as shown in Figure 4a.
4. Tilt the yoke to the left and right to find the point of best possible convergence of the red and blue lines at the edges, top, and bottom of the screen as shown in Figure 5.
5. When the correct position is located, place wedges 2 and 3 as shown in Figure 3b or 4b.
6. Remove wedge 1 and place it in the final position as shown in Figure 3c or 4c. Reconnect resistor R723 to turn on the green gun.

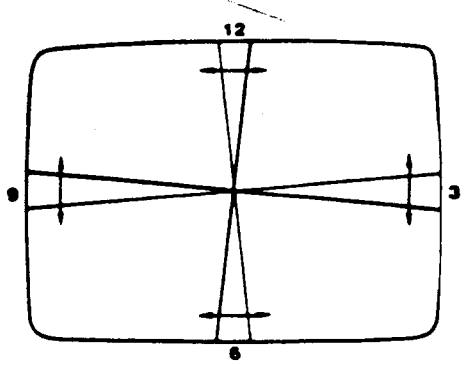

Figure 2 — Tilt yoke up or down to converge Red and Blue vertical lines at 6 and 12 o'clock positions, and Blue horizontal lines at 3 and 9 o'clock positions.

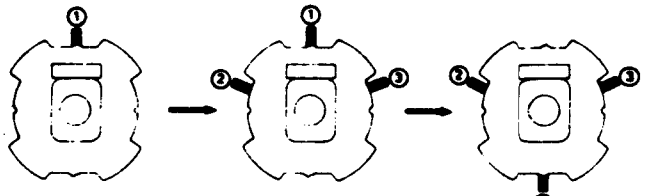

Figure 3a Figure 3b Figure 3c

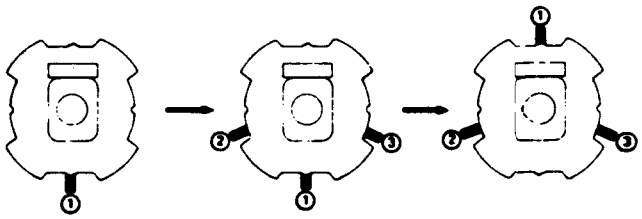

Figure 4a Figure 4b Figure 4c

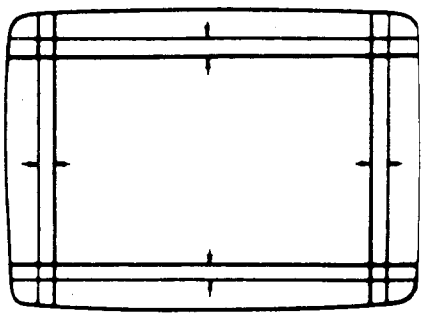

Figure 5 - Tilt yoke left or right to converge Red and Blue horizontal lines at the 6 and 12 o'clock positions, and Red and Blue vertical lines at the 3 and 9 o'clock positions.

Note: A computer delivering RGB TTL output (IBM or Apple) should be used to properly test the RGB circuitry. However, if a computer is not available, the following procedure may be used.
EXCEPTION: CM8562/CM8762/8CM562 does not accept Analog RGB or X-RGB signals.

RGB INTERFACE P.C. BOARD CHECKS FOR ALL MODELS (Except CM8562/CM8762/8CM542)

Late Production RGB Interface models are IBM Compatible only after Feb. 87.
Early Production models accept Apple (X-RGB) or IBM (RGB-1) prior to Feb. 2, 1987.

The purpose of this board is to accept RGB TTL signal inputs (RGB—I or X-RGB) and develope the R, G, and B signals in the monitor. By grounding the control input (Pin 1 of 8 pin Din Plug) the interface circuit will decode X-RGB to equal RGB-I signals in the monitor.

Interface P.C. Board Check

1. If either Apple (X-RGB) or IBM (RGB-I) signals are available as a TTL input the interface operation in the other signal mode may be checked. By grounding the control input on each color the other mode will appear. Pins 2, 3, 4, and 5 the 8 Pin Din Jack are high level when open. Use the cross reference chart for this cross color check.
2. To confirn proper operation of the RGB Interface Board, refer to the following truth table and ground the pins as shown. A voltmeter may be used to determine whether the output levels are high (1) or low (0). (Refer to schematic for pin nos.).
3. Another quick check may be done using a sine or square wave generator. A 1 to 3 kHz square wave (2Vp-p) may be injected into the pins of the DIN jack in the truth table. Color flashes should be visible on the screen which correspond to the pin or pins connected to the signal generator. Pin 2 should give red flashes, pin 3 green flashes, etc. when in the IBM mode. The colors will vary when pin 1 is grounded along with any of the others because the Apple colors are not the same as the IBM colors.

IBM TRUTH TABLE

INPUTS					OUTPUTS									
DIN PLUG PINS					IC272 PINS								IC271 PINS	
(I)	(B)	(G)	(R)	*										
5	4	3	2	1	1	2	3	4	5	6	7	8	11	13
0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	1	1	1	1	1	0	0	0	0	0	0	0
0	0	1	0	1	0	0	0	1	1	1	0	0	0	1
0	0	1	1	1	1	1	1	0	1	0	0	0	0	1
0	1	0	0	1	0	0	0	0	0	0	1	1	1	0
0	1	0	1	1	1	1	1	0	0	0	1	1	1	0
0	1	1	0	1	0	0	0	1	1	1	0	0	1	1
0	1	1	1	1	1	1	1	0	0	0	1	1	1	1
1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
1	0	0	1	1	1	1	1	0	0	0	0	0	0	0
1	0	1	0	1	0	0	0	1	1	1	0	0	0	1
1	0	1	1	1	1	1	1	0	0	0	1	1	1	1
1	1	0	0	1	0	0	0	0	0	0	0	0	0	0
1	1	0	1	1	1	1	1	0	0	0	0	0	0	0
1	1	1	0	1	0	0	0	1	1	1	0	0	0	1
1	1	1	1	1	1	1	1	0	0	0	1	1	1	1

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APPLE TRUTH TABLE

INPUTS					OUTPUTS									
DIN PLUG PINS					IC272 PINS								IC271 PINS	
(I)	(B)	(G)	(R)	*										
5	4	3	2	1	1	2	3	4	5	6	7	8	11	13
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	1	0	1	0	0	1	0	0	1	0	0	0
0	0	1	0	0	0	1	0	0	0	0	0	1	0	1
0	0	1	1	0	1	1	0	1	0	0	1	1	0	1
0	1	0	0	0	0	0	0	0	1	0	0	0	1	0
0	1	0	1	0	1	0	0	1	1	0	1	0	1	0
0	1	1	0	0	0	1	0	0	1	0	0	1	1	1
0	1	1	1	0	1	1	0	1	1	0	1	1	1	1
1	0	0	0	0	0	0	1	0	0	1	0	0	0	0
1	0	0	1	0	1	0	1	1	0	1	1	0	0	0
1	0	1	0	0	0	1	1	0	0	1	0	1	0	1
1	0	1	1	0	1	1	1	1	0	1	1	1	0	1
1	1	0	0	0	0	0	1	0	1	1	0	0	1	0
1	1	0	1	0	1	0	1	1	1	1	1	0	1	0
1	1	1	0	0	0	1	1	0	1	1	0	1	1	1
1	1	1	1	0	1	1	1	1	1	1	1	1	1	1

* IBM/APPLE switching line. (open=IBM; ground=APPLE)

RGB-TTL INPUTS (8 PIN DIN)
Color Decoding Chart

Levels shown are with monitor driven by computer.

APPLE X-RGB	Pin 5	4	3	2	IBM RGB-I
BLACK	0	0	0	0	BLACK
MAGENTA	0	0	0	1	RED
DARK BLUE	0	0	1	0	GREEN
PURPLE	0	0	1	1	BROWN
DARK GREEN	0	1	0	0	BLUE
GREY 1	0	1	0	1	MAGENTA
MIDDLE BLUE	0	1	1	0	CYAN
LIGHT BLUE	0	1	1	1	WHITE
BROWN	1	0	0	0	GREY
ORANGE	1	0	0	1	LIGHT RED
GREY 2	1	0	1	0	LIGHT GREEN
PINK	1	0	1	1	LIGHT YELLOW
GREEN	1	1	0	0	LIGHT BLUE
YELLOW	1	1	0	1	LIGHT MAGENTA
AQUA	1	1	1	0	LIGHT CYAN
WHITE	1	1	1	1	INTENSIFIED WHITE

TTL Levels
Low (0) = Zero to .8 volts
High (1) = 2.4 to 5 volts

Pin 1 is Apple/IBM Control Line
Low (0) = Apple, High (1) = IBM Colors

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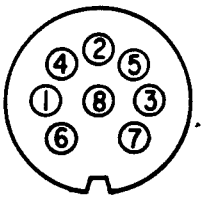
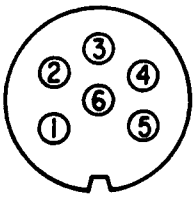
RGB 8 and 6 Pin DIN Sockets

PIN ASSIGNMENTS

PIN NO.	TTL INPUT 8 PIN SIGNAL	ANALOG 6 PIN SIGNAL
*1	IBM Open/Apple Gnd.	Green
2	Red	Horiz. Sync
3	Green	Ground
4	Blue	Red
5	Intensity	Blue
6	Ground	Vert. Sync
7	Horiz. Sync	
8	Vert. Sync	



TTL INPUT



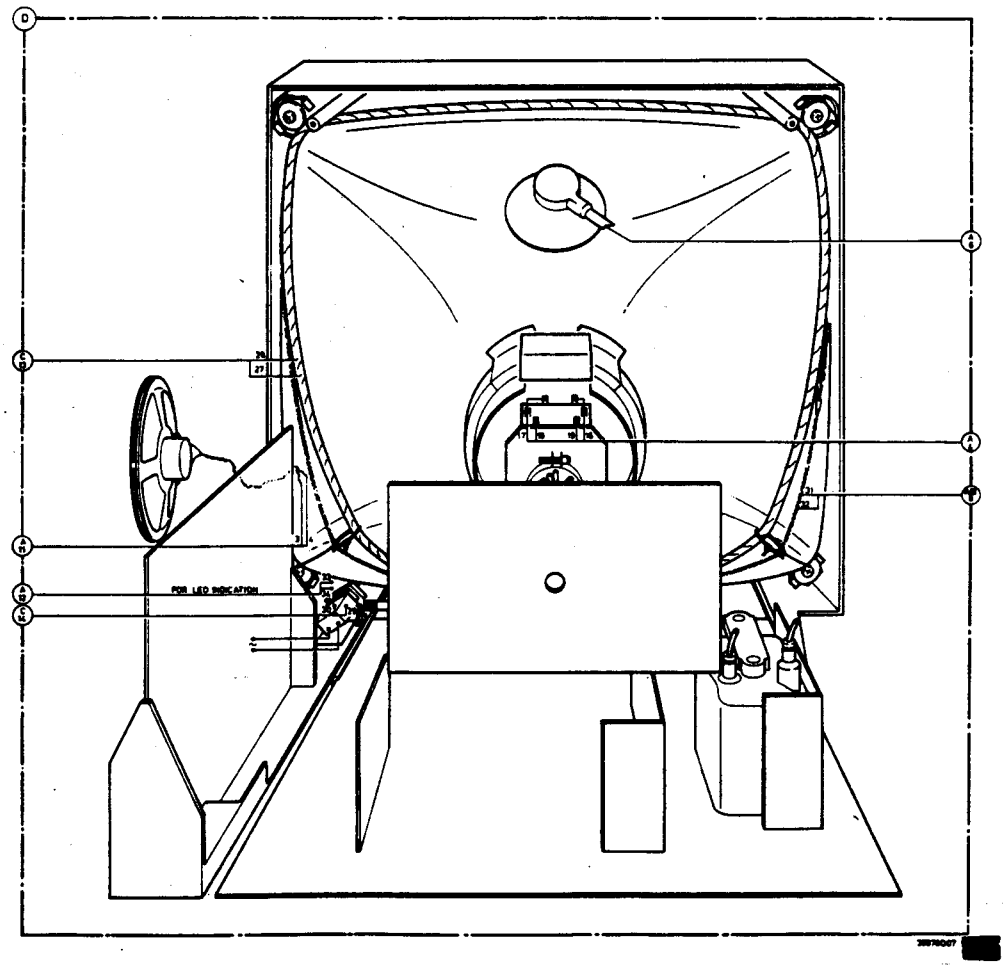
*ANALOG INPUT

When using these sockets before connecting the equipment, place the RGB/Composite Switch in the RGB position.

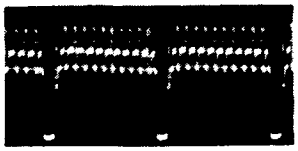
***Not used in CM8562/CM8762/8CM542**

INTERCONNECT DIAGRAM

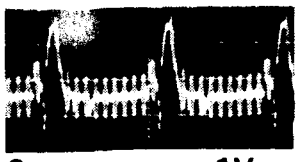
Note: To Remove Power Board Depress Locking Clip Located on Bottom of Cabinet Beneath Power Board.



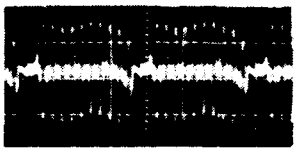
WAVEFORMS



1. .7Vp-p 20μS

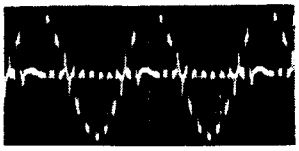


2. .1Vp-p 20μS



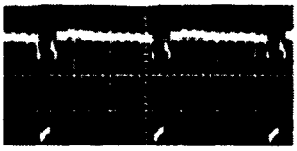
3. .65Vp-p 20μS

4. .45Vp-p 20μS

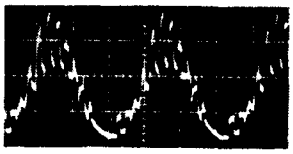


5. .7Vp-p 20μS

6. 10.2Vp-p 20μS



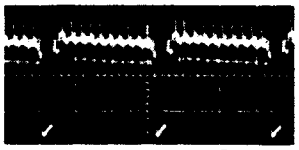
7. .25Vp-p 20μS



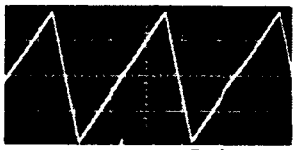
8. 2.5Vp-p 20μS

9. 1.4Vp-p 20μS

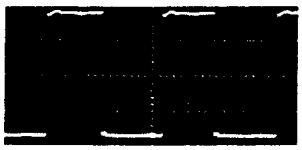
10. 1.75Vp-p 20μS



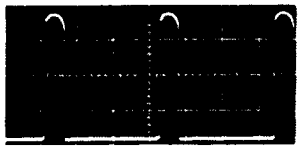
11. .8Vp-p 20μS



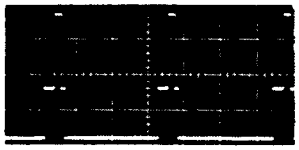
12. 3.2Vp-p 20μS



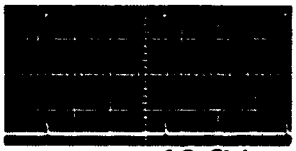
13. 1.7Vp-p 20μS



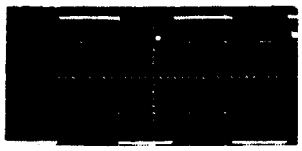
14. 5.8Vp-p 20μS



15. 10.3Vp-p 20μS



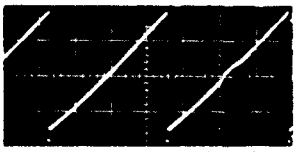
16. 10.2Vp-p 5mS



17. 48Vp-p 20μS

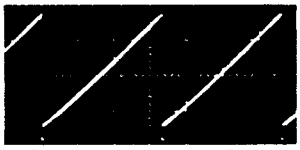
18. 11.5Vp-p 20μS

19. 19Vp-p 5mS



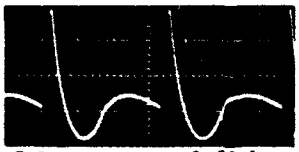
20. 11Vp-p 5mS

21. 2Vp-p 5mS



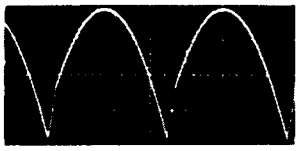
22. 11.3Vp-p 5mS

23. 24Vp-p 5mS

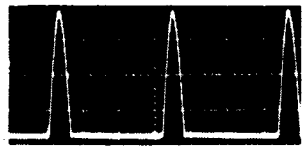


24. 1.9Vp-p 5mS

25. 47Vp-p 5mS

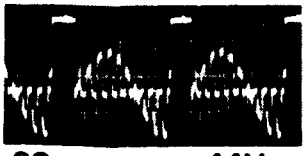


26. 4Vp-p 5mS

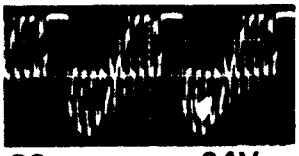


27. 100Vp-p 20μS

28. 65Vp-p 20μS



29. 44Vp-p 20μS



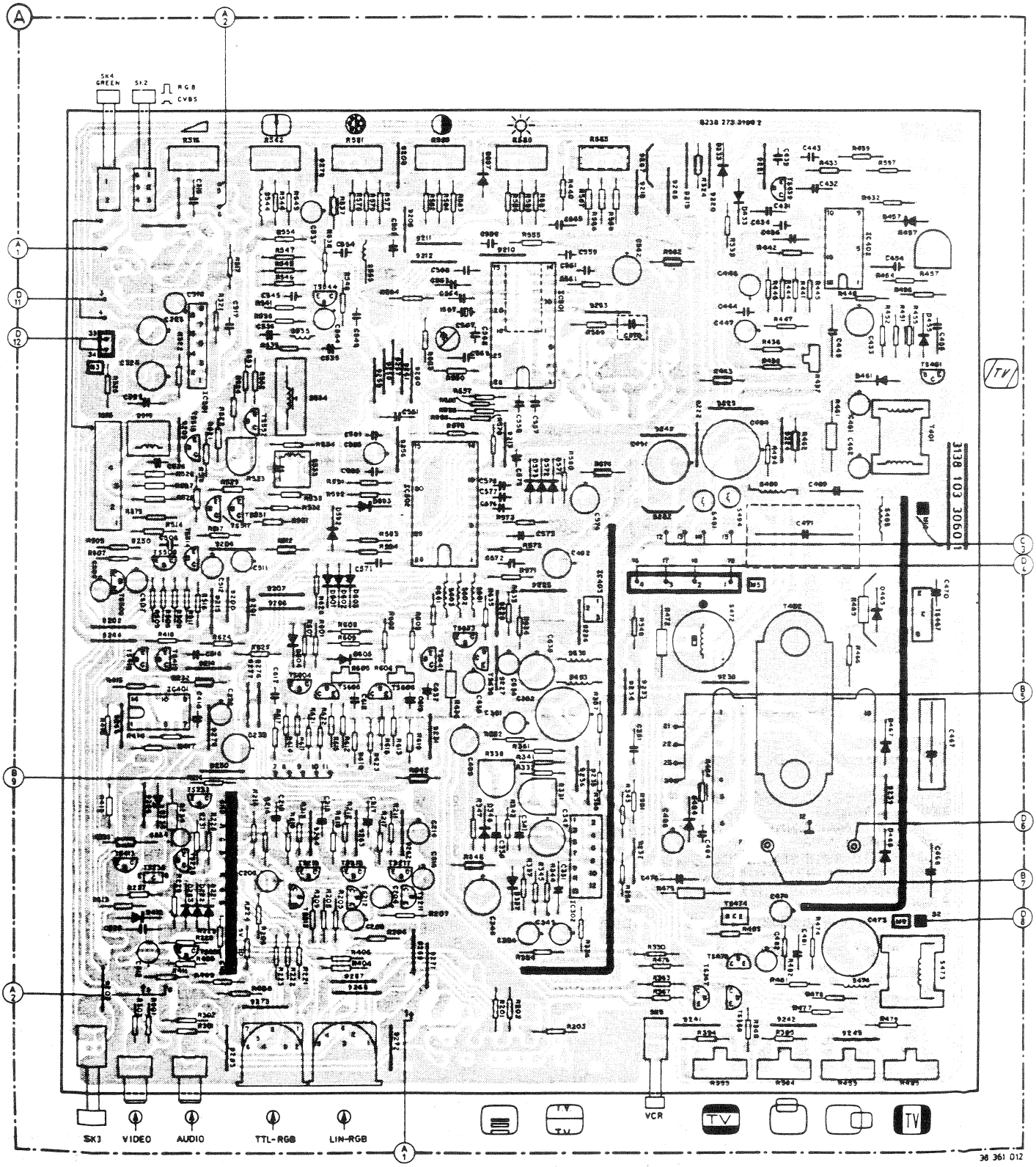
30. 64Vp-p 20μS

WAVEFORM NOTES
UNLESS OTHERWISE SPECIFIED:

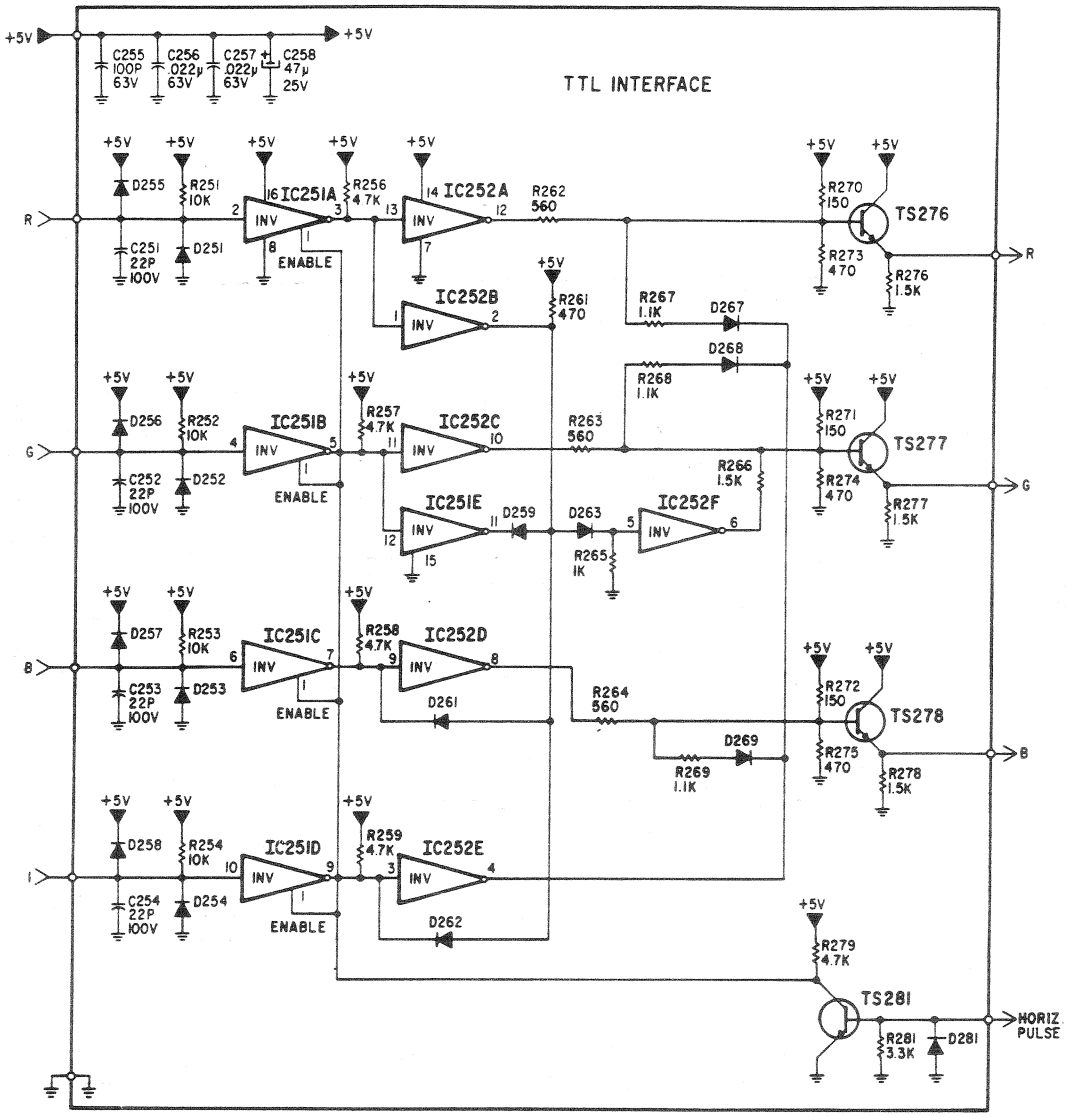
1. WAVEFORMS TAKEN UNDER THE CONDITIONS SPECIFIED THE SCHEMATIC NOTES.
2. SWEEP/TIME CM SETTINGS ARE SHOWN JUST BELOW PHOTOS. ALL PHOTOS WERE TAKEN WITH THE SWEEP TIME CONTROLS IN THE CALIBRATED POSITION. HORIZONTAL POSITIONING OF THE WAVEFORMS WAS ADJUSTED FOR MAXIMUM CLARITY.

8CM505/8CM515/8CM643/CM8505/CM8705 MAIN P.C. BOARD
(viewed from component side)

NOTE: When IC501 has 16 Pin IC the following parts are not used; R550, R559, R561 & C568



INTERFACE SCHEMATIC DIAGRAM
(Late Production Version)



SCHEMATICS NOTES:
UNLESS OTHERWISE SPECIFIED:

1. ALL VOLTAGES AND WAVEFORMS TAKEN UNDER THE FOLLOWING CONDITIONS:
   - LINE VOLTAGE MAINTAINED AT 120VAC, 60Hz VIA AN ISOLATION TRANSFORMER.
   CUSTOMER CONTROLS SET AS FOLLOWS:
   - VOLUME CONTROL (R316) SET TO MINIMUM.
   - COLOR CONTROL (R581) SET FOR 8.75VDC WIPER TO GROUND.
   - CONTRAST CONTROL (R585) SET FOR 8.7VDC WIPER TO GROUND.
   - BRIGHTNESS CONTROL (R589) SET FOR 5VDC WIPER TO GROUND.
   - HUE CONTROL (R565) SET FOR 6VDC WIPER TO GROUND.
   - SK2 IN CVBS POSITION.
   - SK3, SK4 & SK5 OFF.

   E.P. REFERS TO EARLY PRODUCTION
   L.P. REFERS TO LATE PRODUCTION
2. VOLTAGES AND WAVEFORMS WERE TAKEN USING A 10 BAR GATED RAINBOW PATTERN SIGNAL SET TO DELIVER CHROMA BARS OF .5Vp-p AT THE VIDEO IN JACK.
3. ALL VOLTAGES ARE POSITIVE DC WITH RESPECT TO GROUND, BE IT THE ISOLATED (SIGNAL) GROUND OR THE AC (HOT) GROUND WHICHEVER IS PRESENT IN THAT AREA OF CIRCUITRY.
4. VOLTAGES MAY VARY DUE TO NORMAL PRODUCTION TOLERENCES. VOLTAGE SOURCES ARE ALSO NOMINAL.
5. RESISTORS ARE ALL 5%, ¼W, CARBON FILM EXCEPT FOR SOME UNIQUE PARTS. REFER TO REPLACEMENT PARTS LIST.
6. CAPACITOR VALUES ARE IN MICROFARADS & PICOFARADS. REFER TO SCHEMATIC DIAGRAM FOR VALUES AND VOLTAGES EXCEPT FOR UNIQUE PARTS SHOWN IN REPLACEMENT PARTS LIST.

WARNING

Critical components having special safety characteristics are identified with an S by the Ref. No. in the parts list and enclosed within a broken line* along with the safety symbol ⚠ on the schematics or exploded views.

Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from the N.A.P. Consumer Electronics Corp. NAPCEC assumes no liability, express or implied, arising out of any unauthorized modification of design. Servicer assumes all liability.

* Broken line: — · — · — · — ·

(CM8505/CM8562/CM8705/CM8762/
8CM505/8CM515/8CM542/8CM643)

NAP 6523

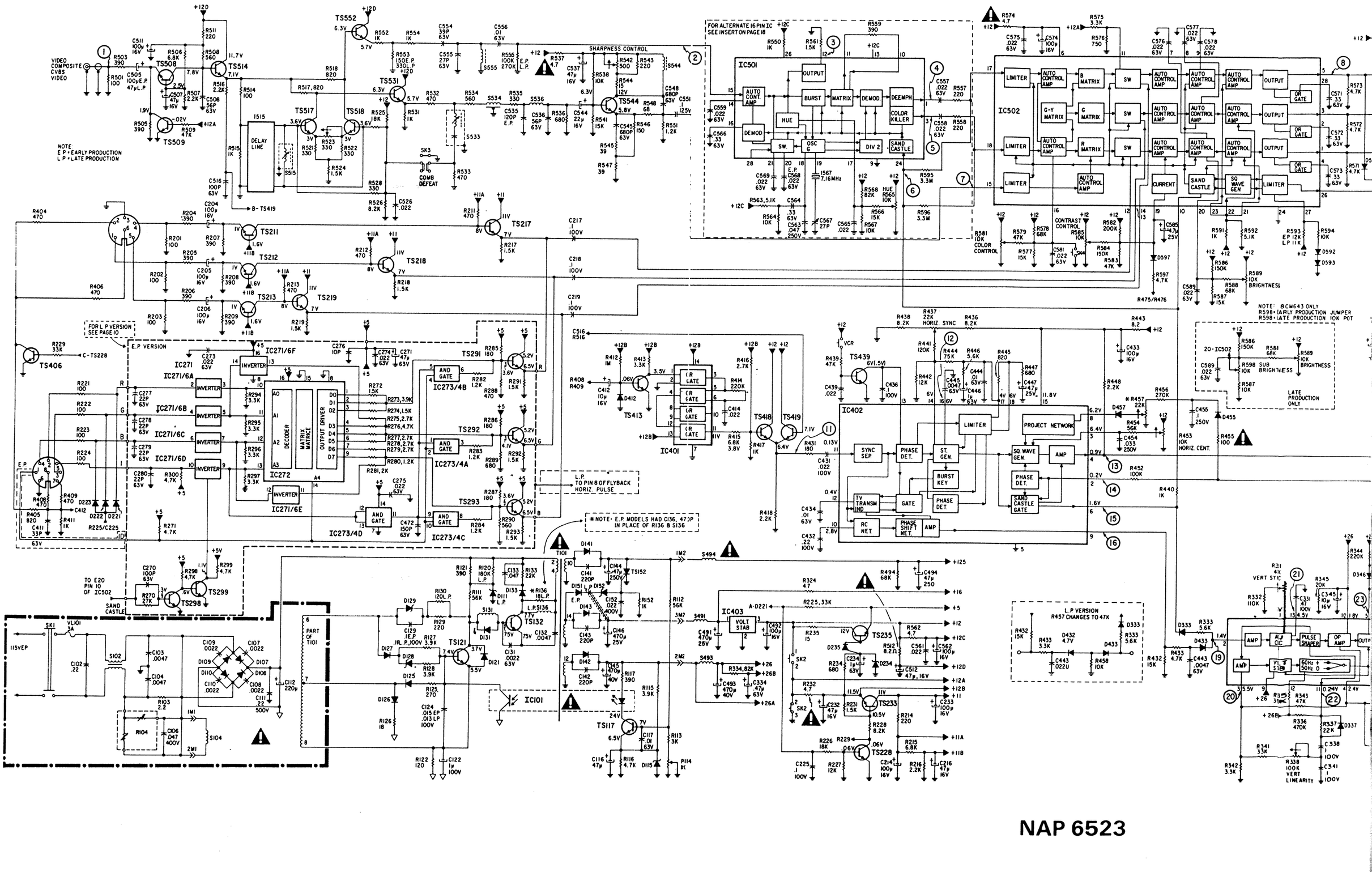
CAUTION: USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING.

INDICATES "HOT" GROUND.

INDICATES ISOLATED SIGNAL GROUND.

8CM505/8CM515/8CM643/CM8505/CM8705 SCHEMATIC DIAGRAM

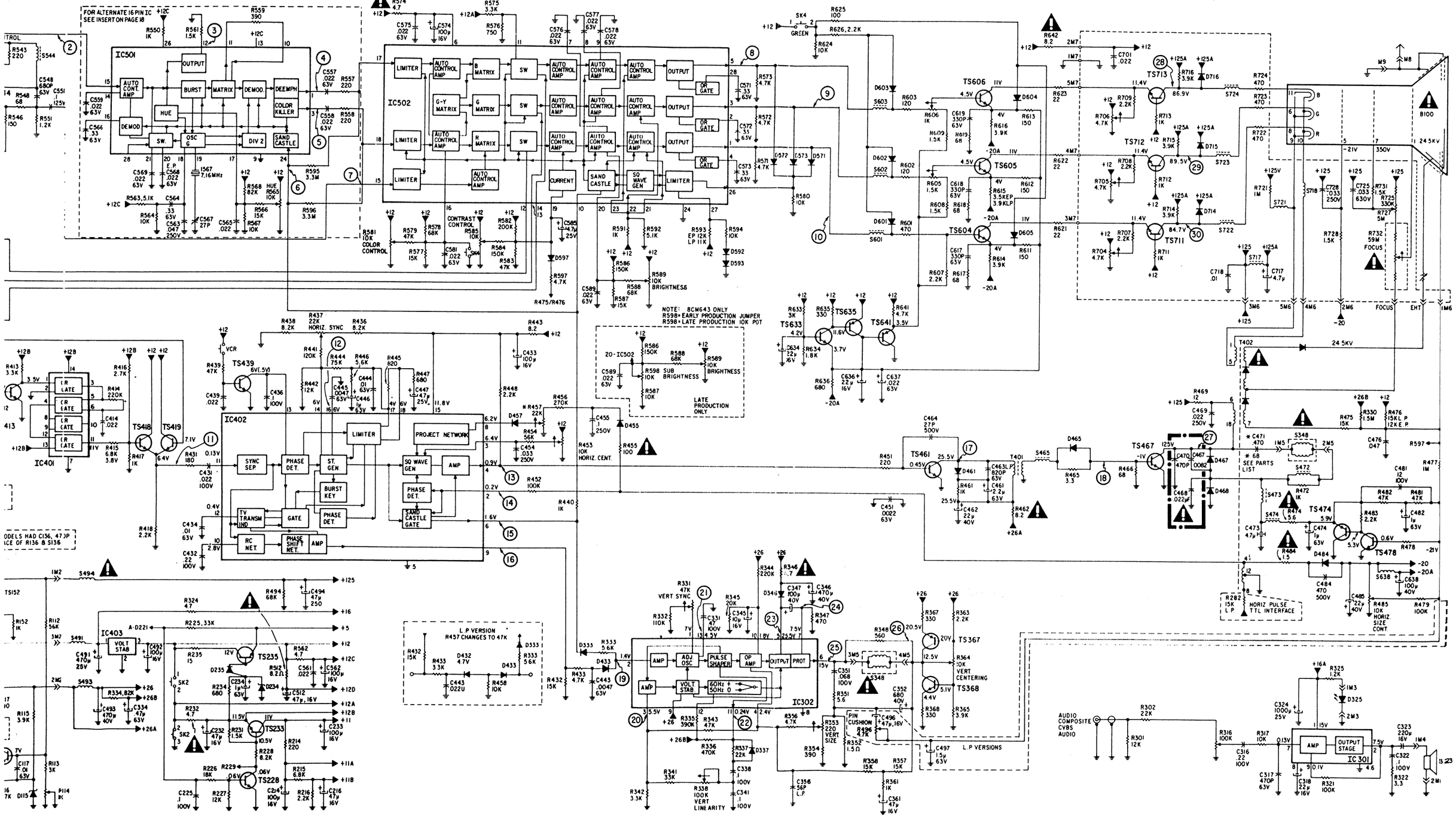
NOTE: IC501 Alternate 16 Pin IC, see Insert page 18



NAP 6523

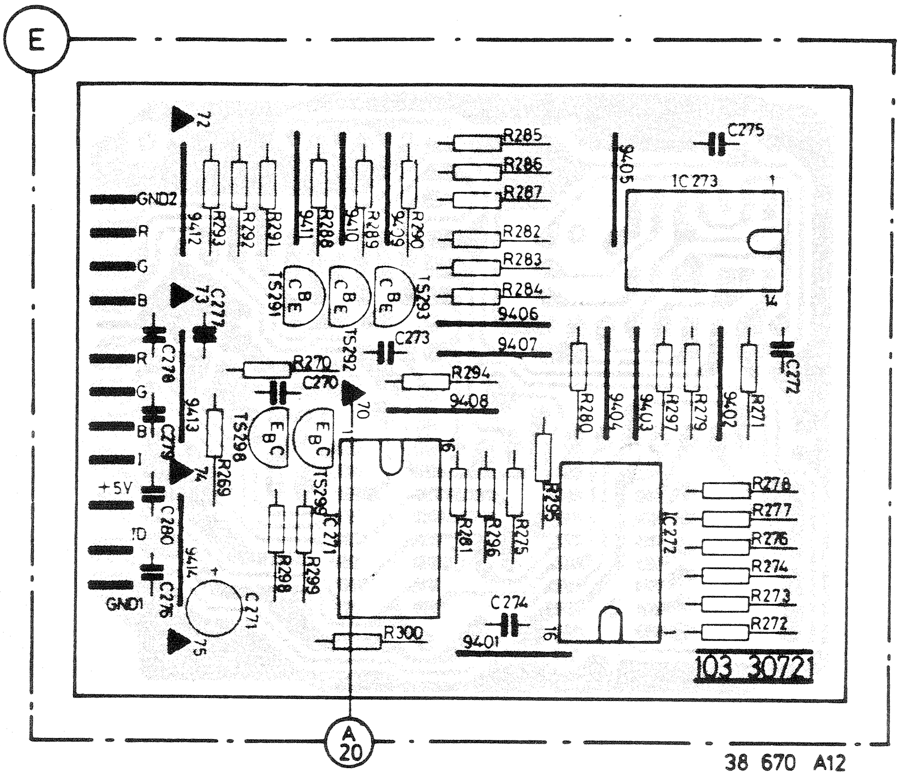
)UND.

1 Alternate 16 Pin IC, see Insert page 18



8CM505/8CM515/8CM643/CM8505/CM8705 RGB INTERFACE P.C. BOARD

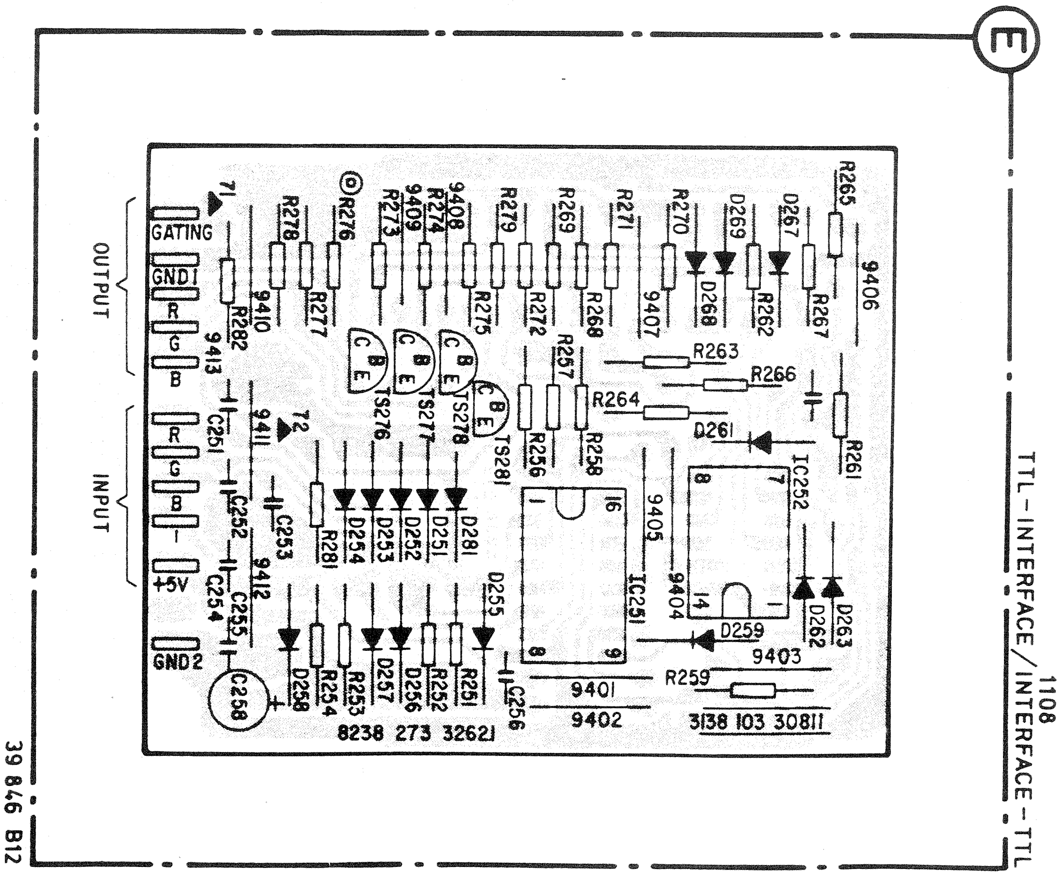
(Early Production Version)
(viewed from component side)


E
GND2
R
G
B
R
G
B
I
+5V
!D
GND1
72
73
74
75
70
9412
9411
9410
9409
9413
9414
R293
R292
R291
R288
R289
R290
R285
R286
R287
R282
R283
R284
9406
9407
9408
TS291
TS292
TS293
TS298
TS299
C278
C277
C279
C280
C276
C271
C273
C270
C272
C274
C275
R270
R294
R269
R298
R299
R281
R296
R275
R295
R300
9401
9405
IC 273
IC271
IC272
R280
9404
9403
R297
R279
9402
R271
R278
R277
R276
R274
R273
R272
103 30721
A
20

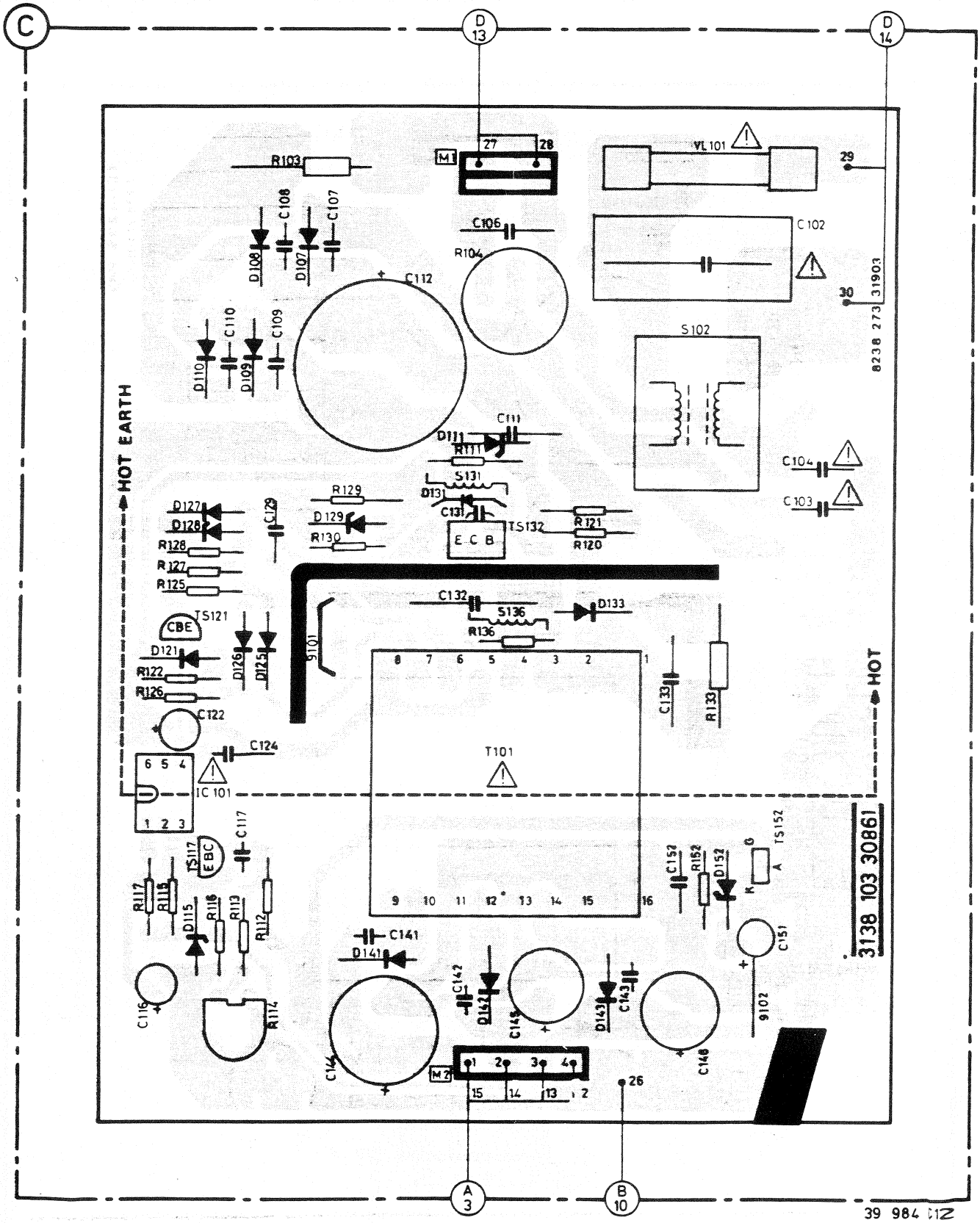
38 670 A12

INTERFACE P.C. BOARD

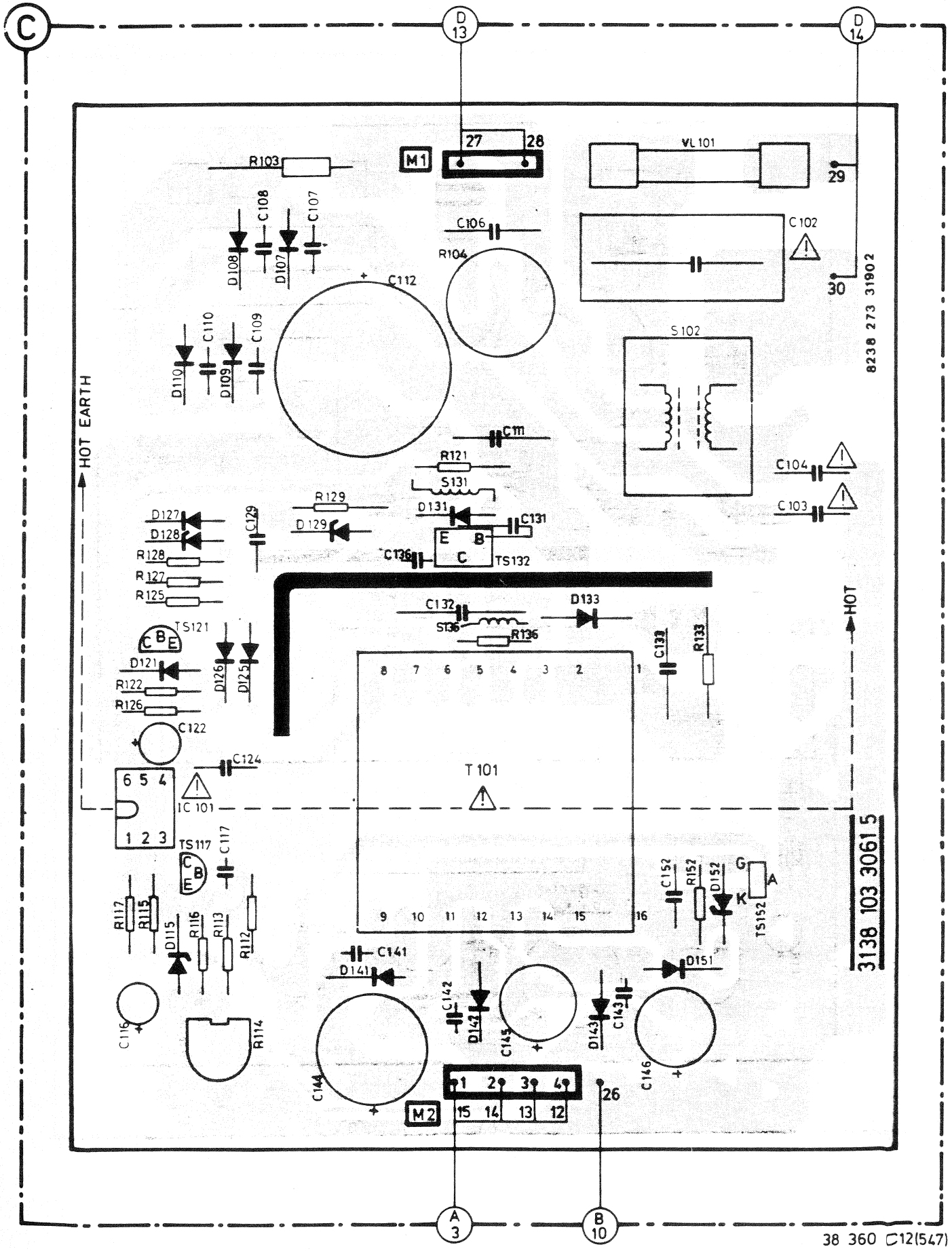
(Late Production Versions)
(viewed from component side)


E
OUTPUT
INPUT
GATING
GND1
R
G
B
R
G
B
I
+5V
GND2
71
72
R278
R276
R273
R274
9409
9408
R279
R269
R271
R270
D269
D267
R265
9406
R282
9410
9413
R277
R275
R272
R268
9407
D268
R262
R267
R257
R263
R266
R264
R261
D261
TS276
TS277
TS278
TS281
R256
R258
C251
C252
C253
9411
R281
D254
D253
D252
D251
D281
9412
C254
C255
D255
C258
D258
R254
R253
D257
D256
R252
R251
C256
IC251
9405
9404
IC252
D259
D262
D263
9403
R259
9401
9402
8238 273 3262J
3138 103 30811
39 846 B12
1108
TTL-INTERFACE/INTERFACE-TTL

POWER SUPPLY P.C. BOARD (Late Production Version)
(viewed from component side)



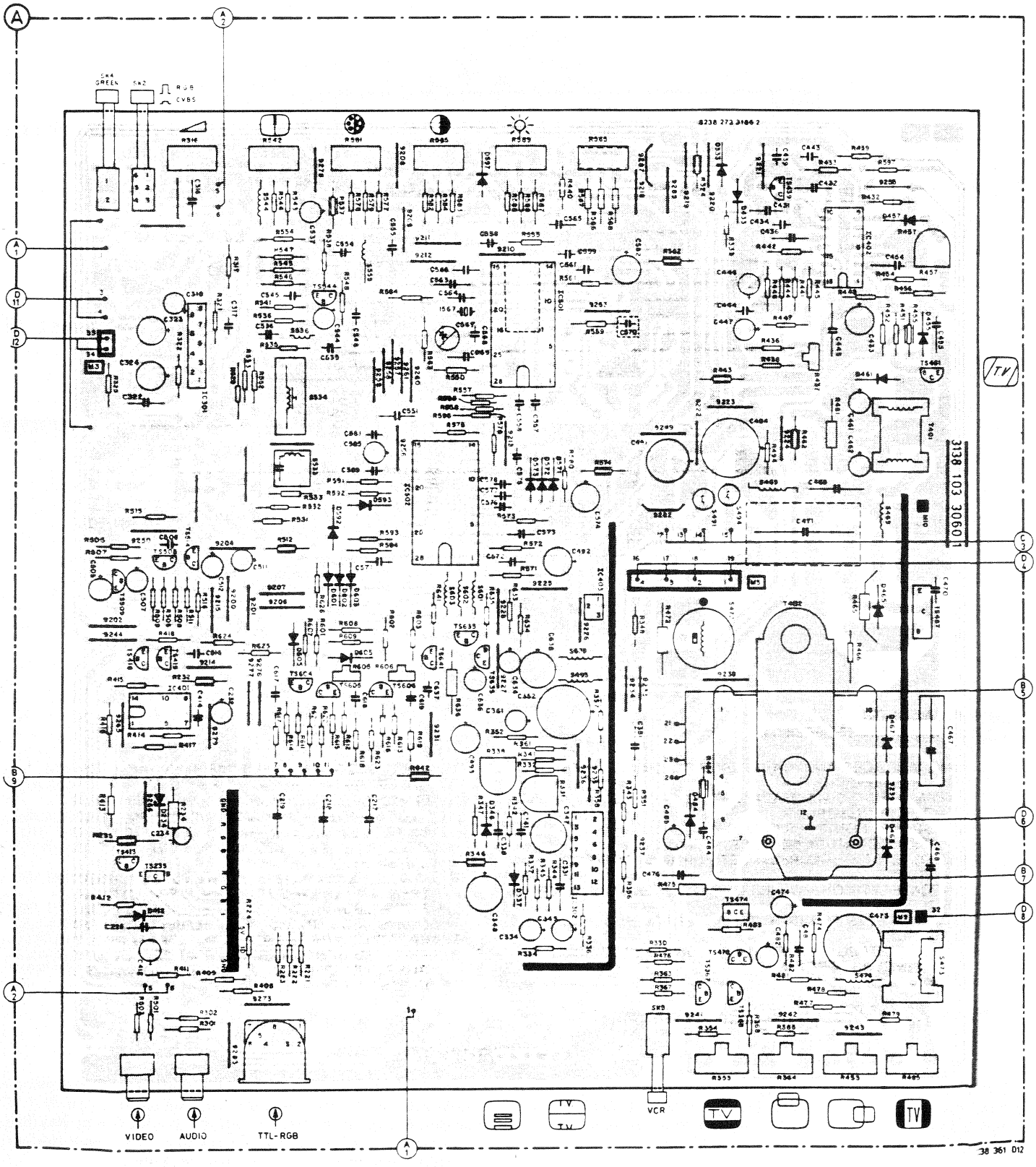
POWER SUPPLY P.C. BOARD (Early Production Version)
(viewed from component side)



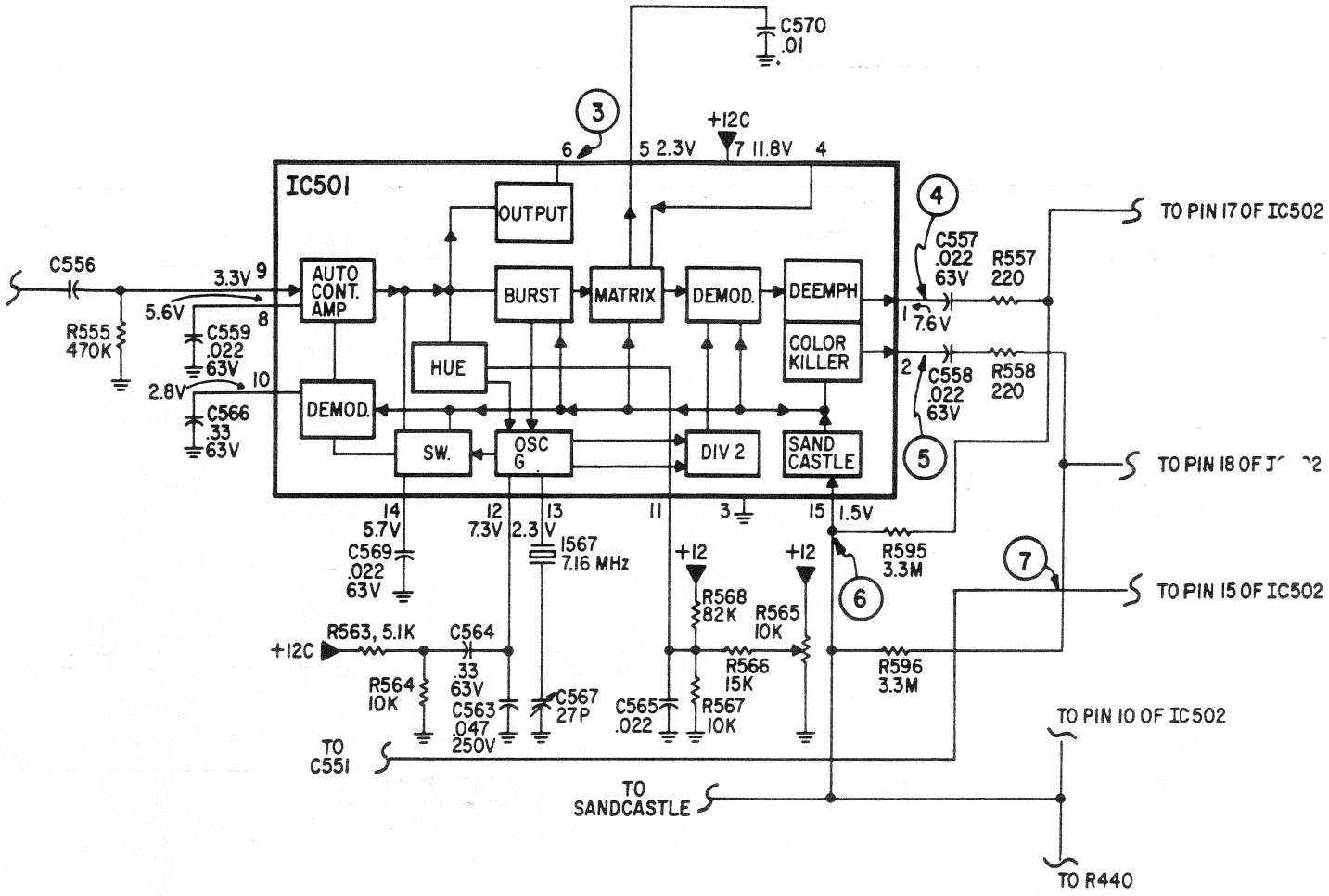
38 360 C12(547)

8CM542/CM8562/CM8762 MAIN P.C. BOARD
(viewed from component side)

NOTE: When IC501 has 16 Pin IC the following parts are not used; R550, R559, R561 & C568



IC501 ALTERNATE 16 PIN IC



SCHEMATIC NOTES
UNLESS OTHERWISE SPECIFIED:

1. ALL VOLTAGES AND WAVEFORMS TAKEN UNDER THE FOLLOWING CONDITIONS:
   - LINE VOLTAGE MAINTAINED AT 120VAC, 60Hz VIA AN ISOLATION TRANSFORMER.
   CUSTOMER CONTROLS SET AS FOLLOWS:
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   - COLOR CONTROL (R581) SET FOR 8.75VDC WIPER TO GROUND.
   - CONTRAST CONTROL (R585) SET FOR 8.7VDC WIPER TO GROUND.
   - BRIGHTNESS CONTROL (R589) SET FOR 5VDC WIPER TO GROUND.
   - HUE CONTROL (R565) SET FOR 6VDC WIPER TO GROUND.
   - SK2 IN CVBS POSITION.
   - SK3, SK4 & SK5 OFF.

   E.P. REFERS TO EARLY PRODUCTION
   L.P. REFERS TO LATE PRODUCTION
2. VOLTAGES AND WAVEFORMS WERE TAKEN USING A 10[illegible] GATED RAINBOW PATTERN SIGNAL SET TO DELIVER CHROMA BARS OF .5Vp-p AT THE VIDEO IN JACK.
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4. VOLTAGES MAY VARY DUE TO NORMAL PRODUCTION TOLERANCES. VOLTAGE SOURCES ARE ALSO NOMINAL.
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6. CAPACITOR VALUES ARE IN MICROFARADS & PICOFARADS. REFER TO SCHEMATIC DIAGRAM FOR VALUES AND VOLTAGES EXCEPT FOR UNIQUE PARTS SHOWN IN REPLACEMENT PARTS LIST.

WARNING

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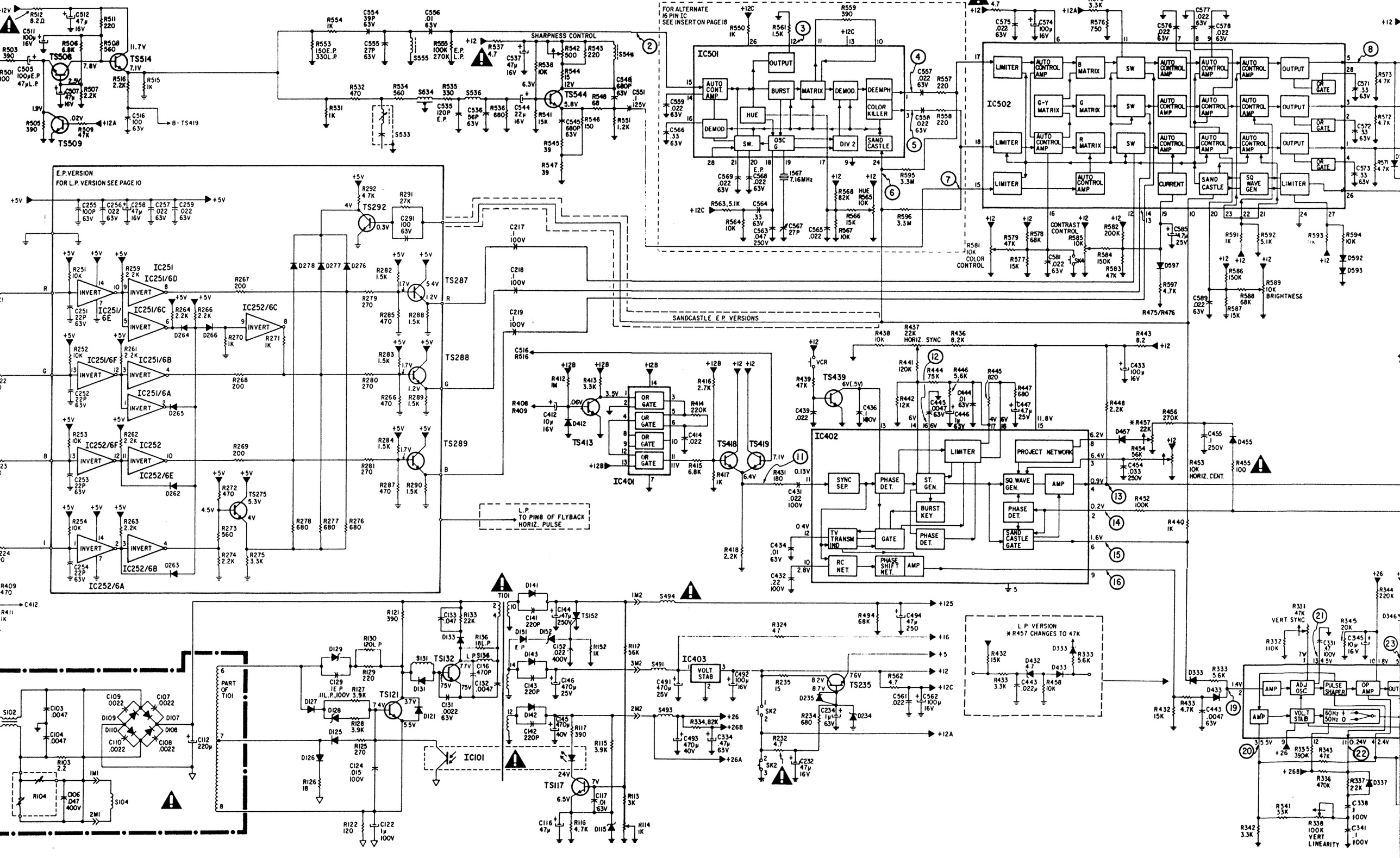
* Broken line: — · — · — · —

E A SEPARATE ISOLATION TRANSFORMER
R THIS UNIT WHEN SERVICING.

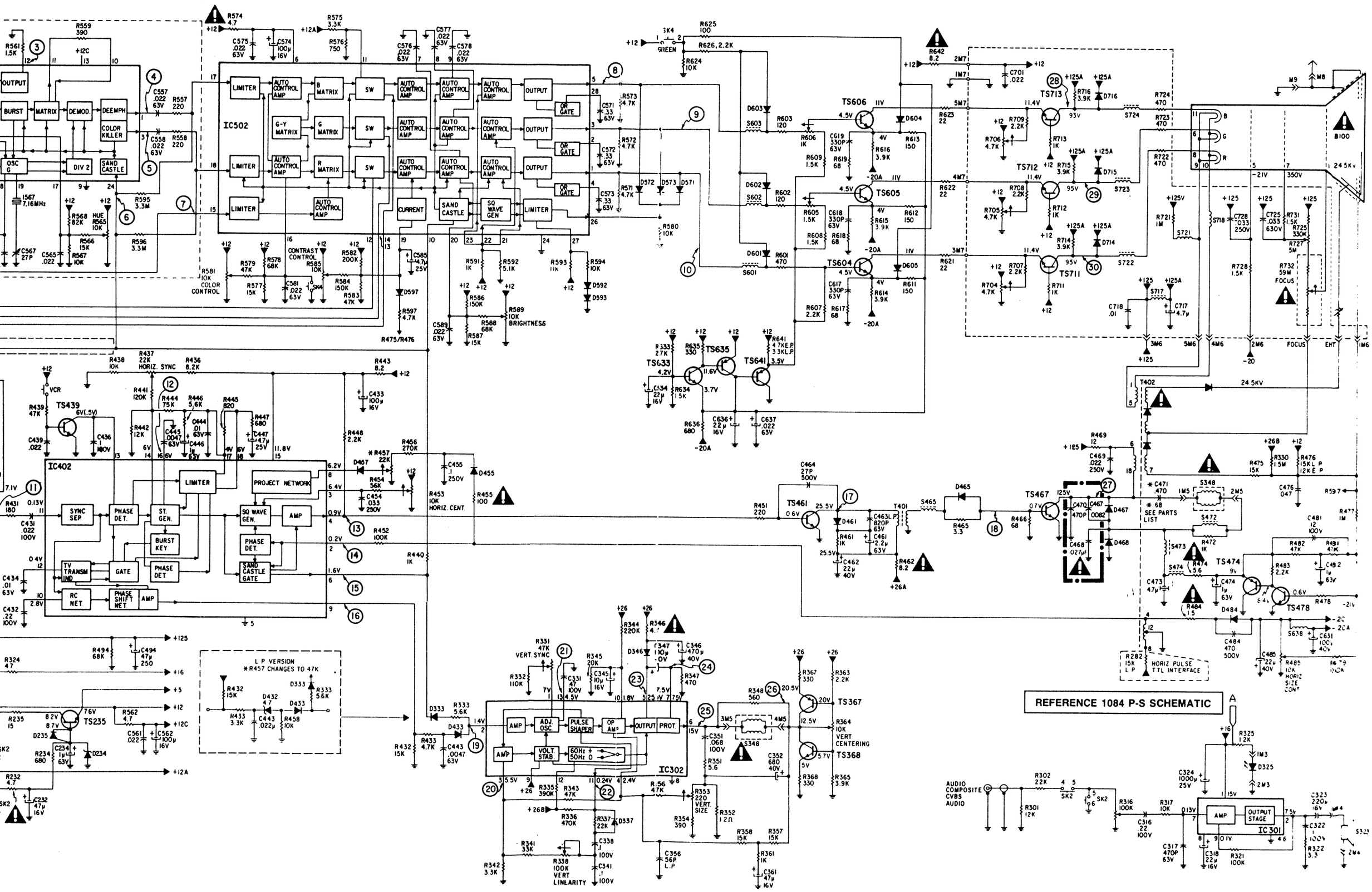
INDICATES "HOT" GROUND.

INDICATES ISOLATED SIGNAL GROUND.

NOTE: IC501 Alternate 16 Pin IC, See Insert Page 18



501 Alternate 16 Pin IC, See Insert Page 18

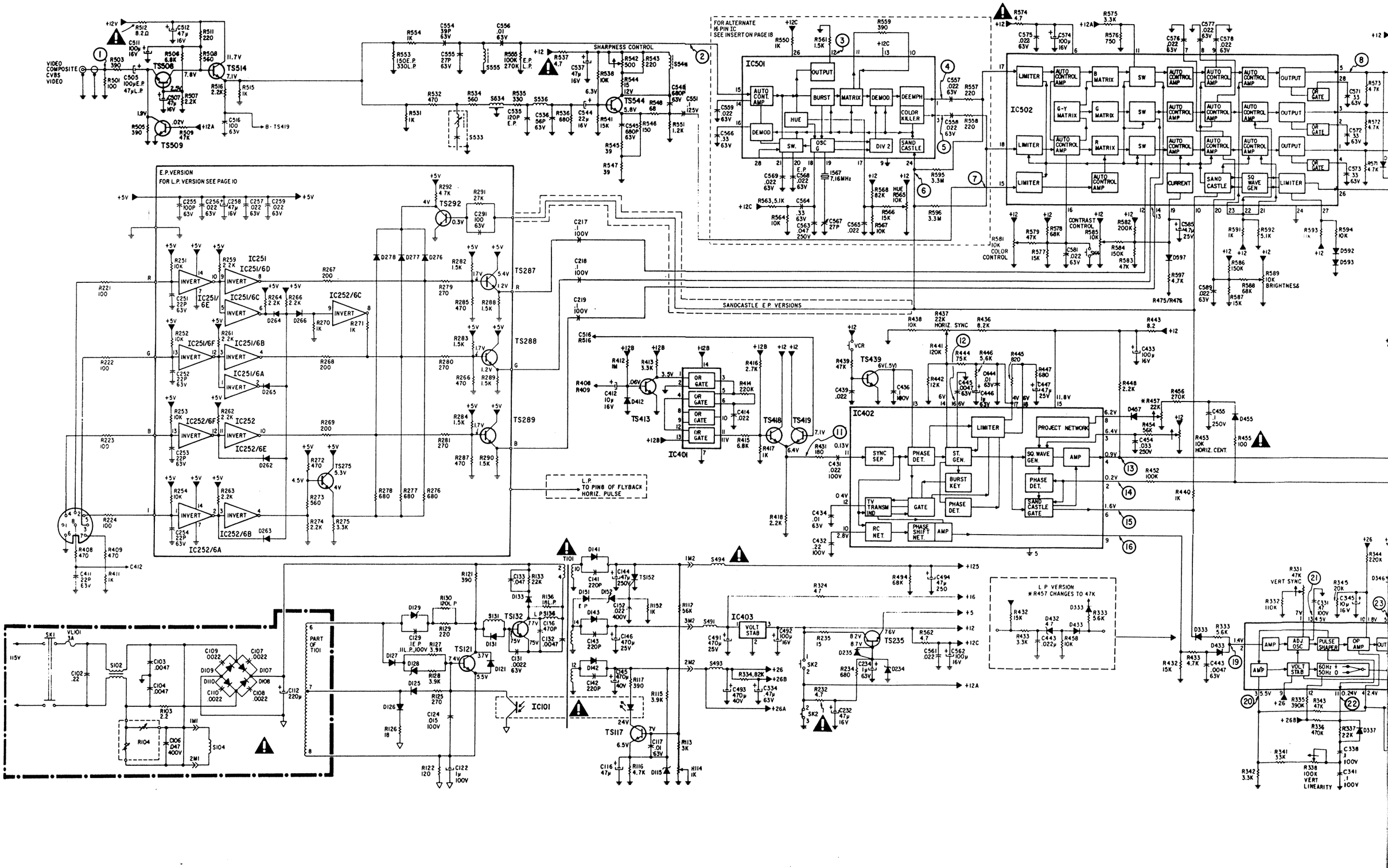


CAUTION: USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING.

⏚ INDICATES "HOT" GROUND.

⏚ INDICATES ISOLATED SIGNAL GROUND.

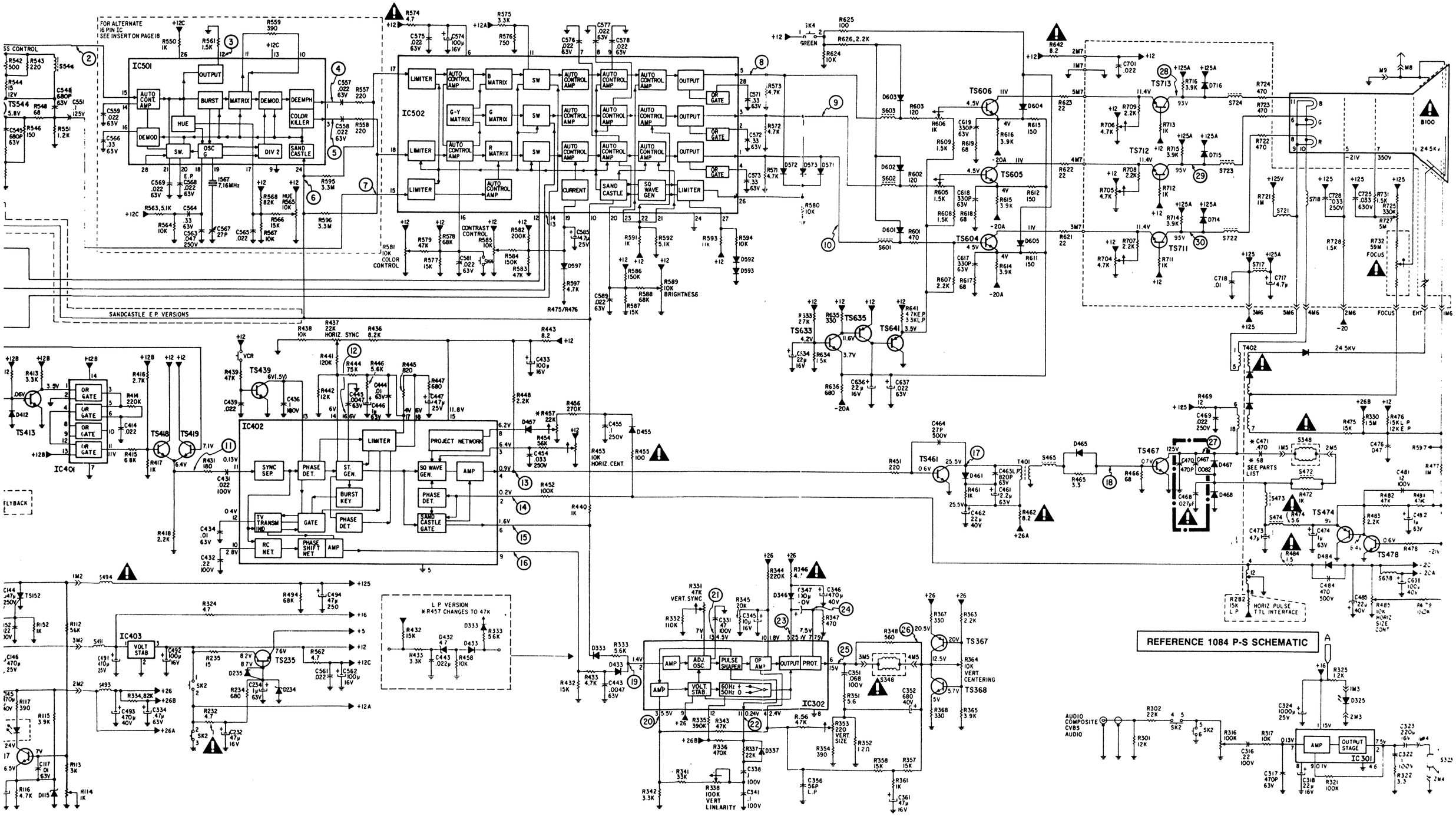
NOTE: IC501 Alternate 16 Pin IC, See Insert Page 18



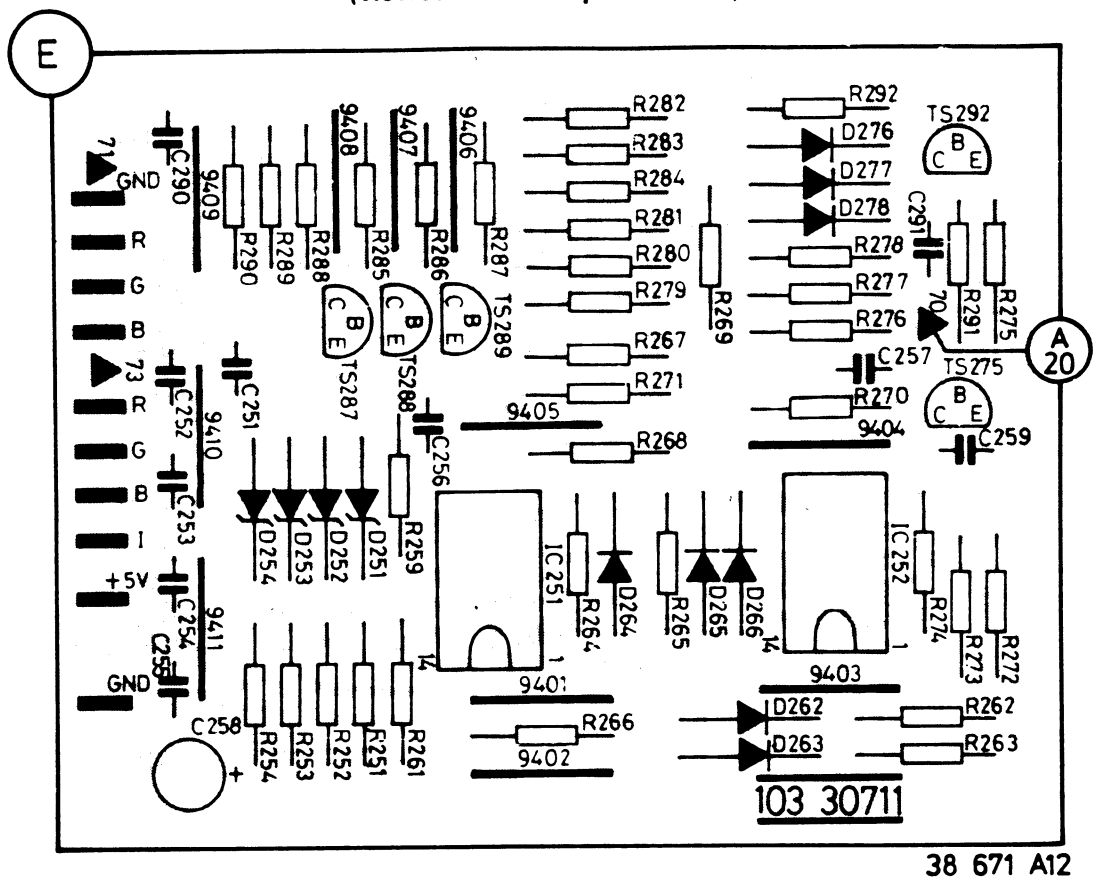
8CM542/CM8562/CM8762 SCHEMATIC DIAGRAM

NOTE: IC501 Alternate 16 Pin IC, See Insert Page 18

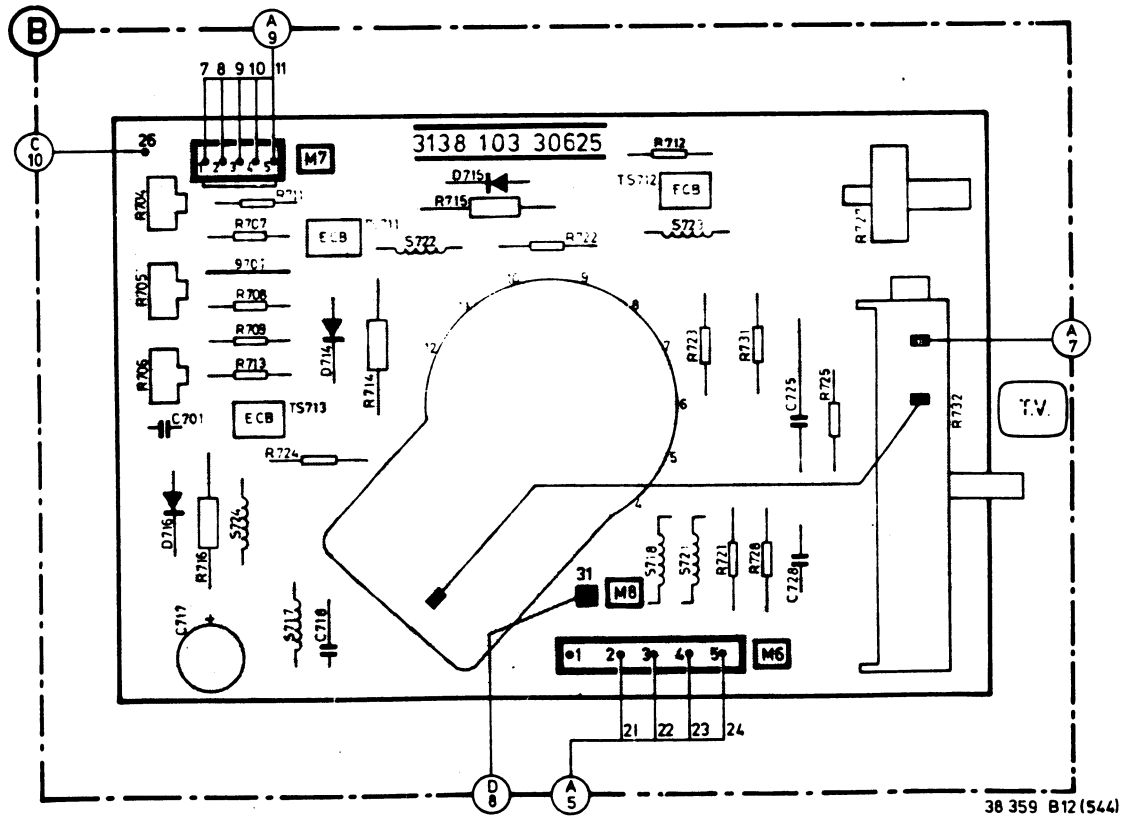
GROUND.



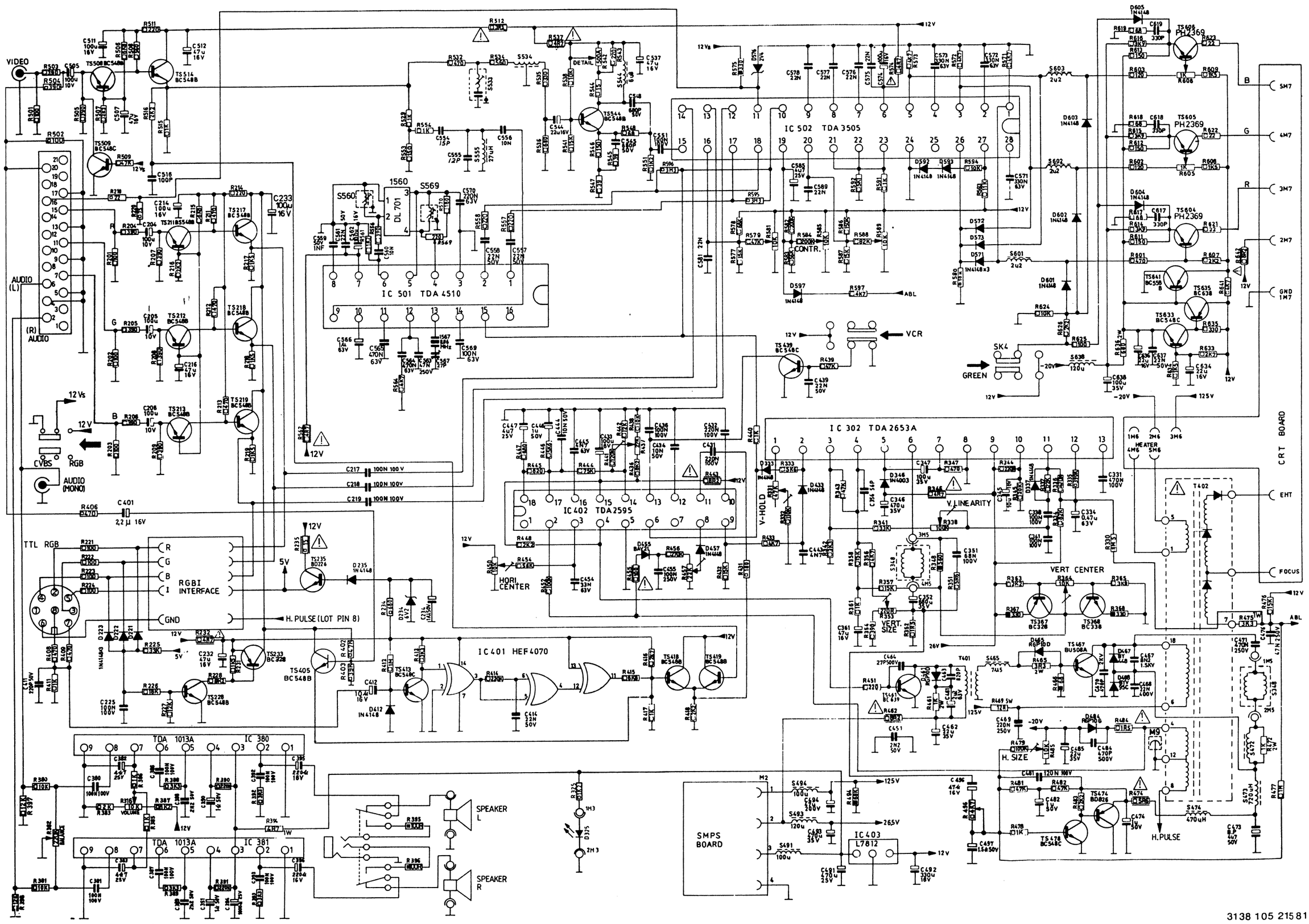
8CM542/CM8562/CM8762 RGB INTERFACE P.C. BOARD
(Early Production Version)
(viewed from component side)



CRT P.C. BOARD
(viewed from component side)



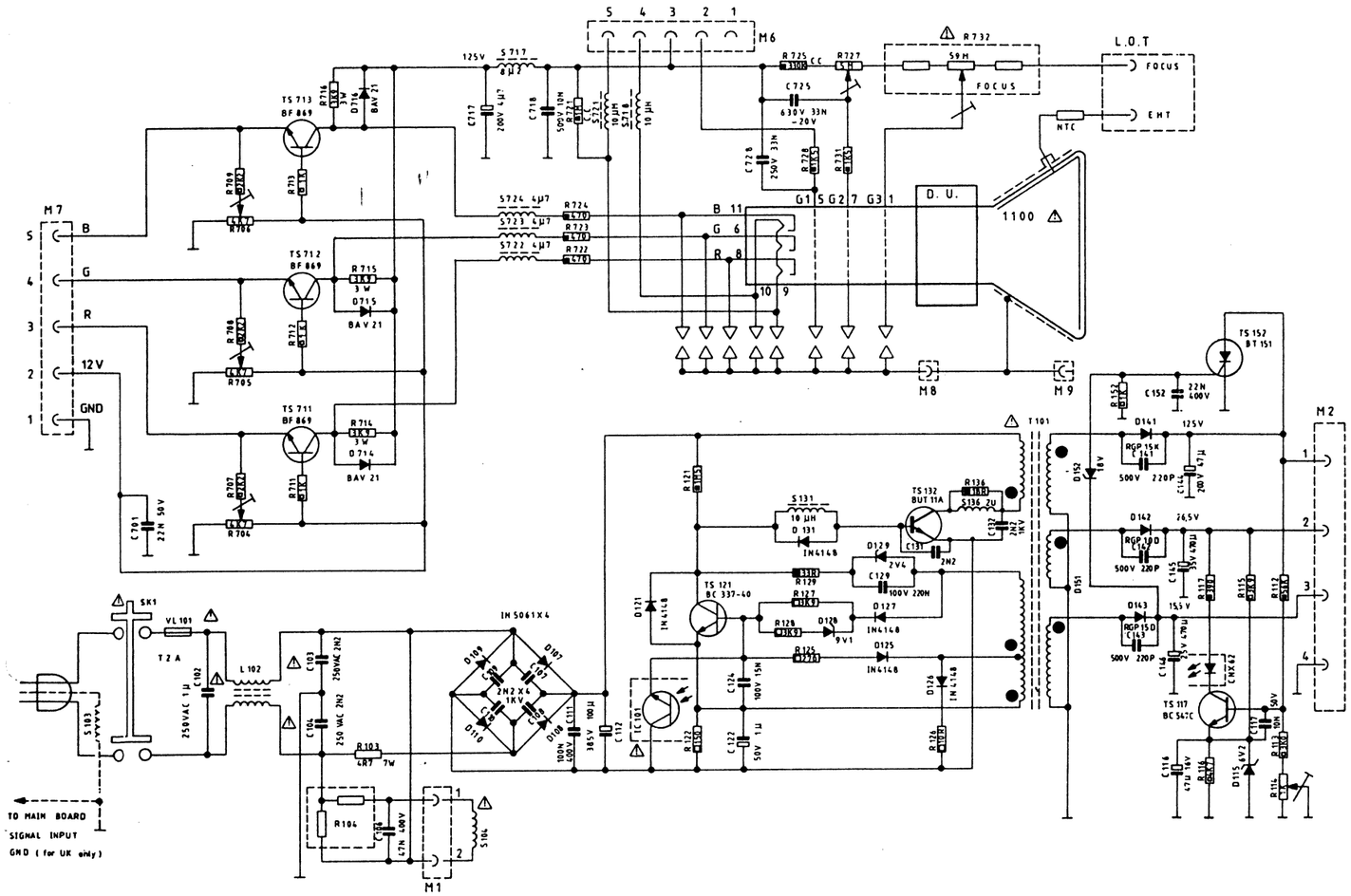
38 359 B12 (544)

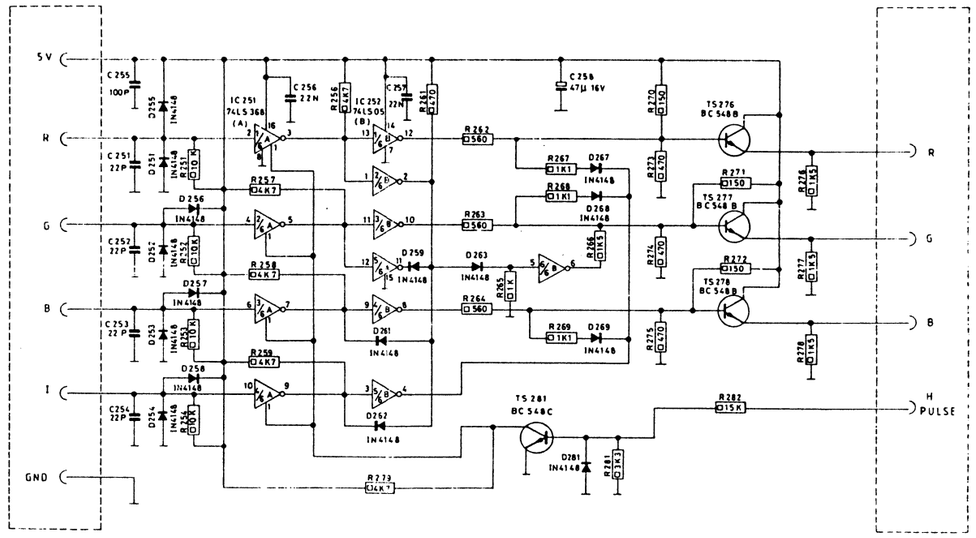


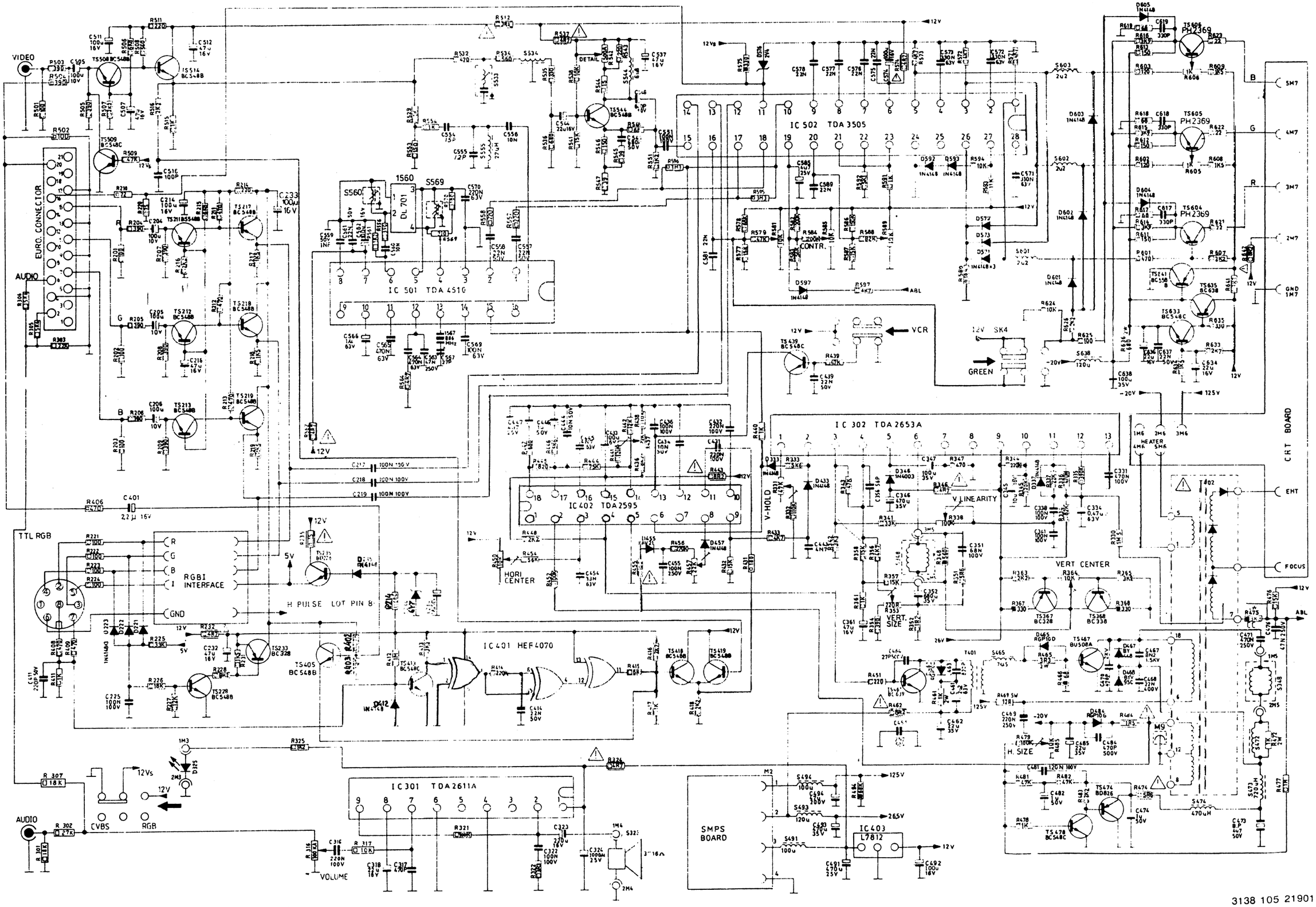
3138 105 21581

1081

STEREO


M7
M6
M8
M9
M2
M1
L.O.T
FOCUS
EHT
NTC
D.U.
1100
TS 713 BF 869
TS 712 BF 869
TS 711 BF 869
TS 132 BUT 11A
TS 121 BC 337-40
TS 117 BC 547C
TS 152 BT 151
TS 281 BC 548C
IM 5061X4
SK1
VL 101
T 2 A
L 102
S 103
S 104
T 101
TC 101
S 131
S 717
S 724 4µ7
S 723 4µ7
S 722 4µ7
TO MAIN BOARD
SIGNAL INPUT
GND (for UK only)
12V
GND
B
G
R

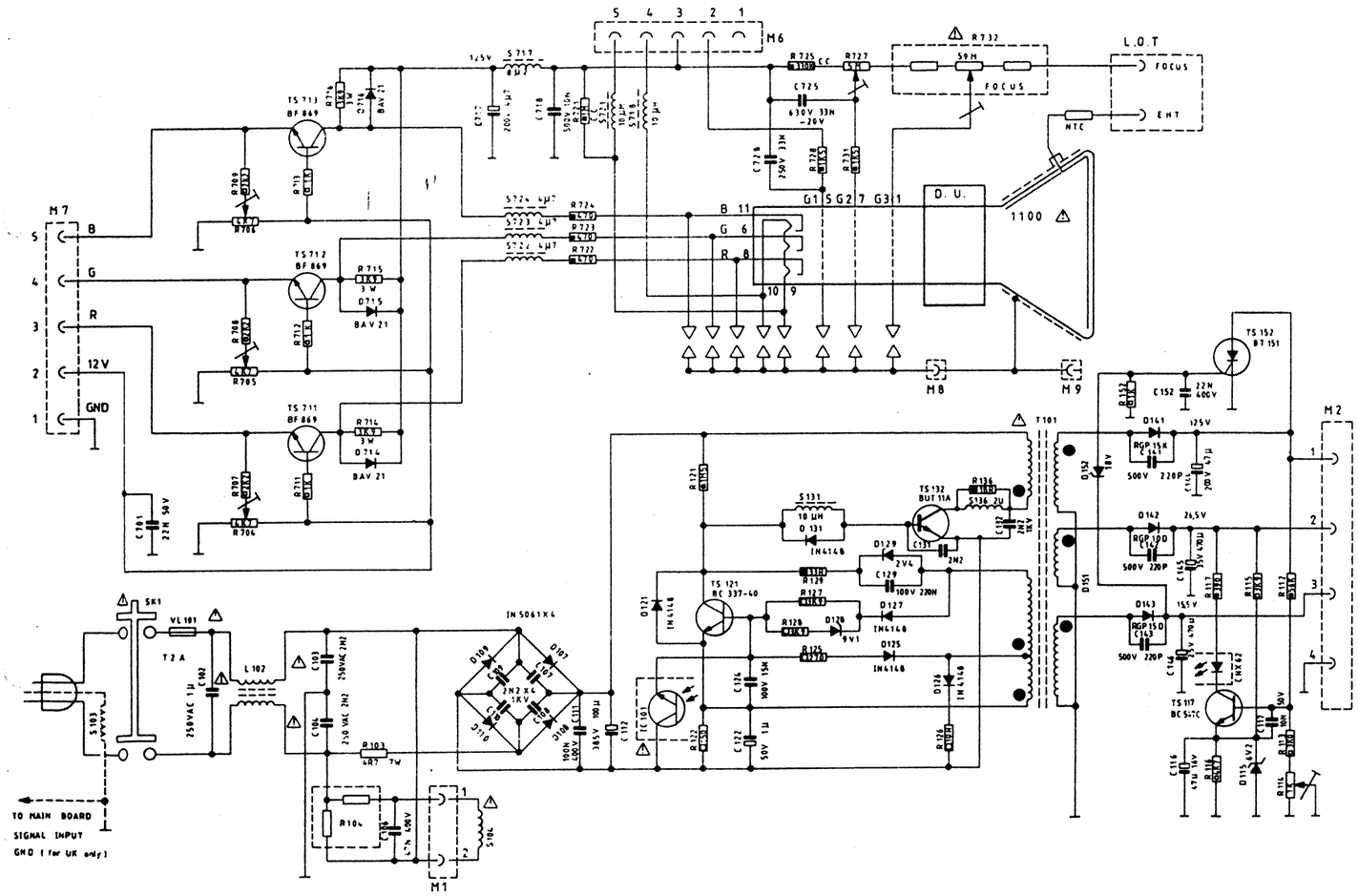

5V
R
G
B
I
GND
IC 251 74LS 368 (A)
IC 252 74LS 05 (B)
TS 276 BC 548 B
TS 277 BC 548 B
TS 278 BC 548 B
TS 281 BC 548C
PULSE



3138 105 21901

1081

MONO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M6
M8
M9
M1
M2
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FOCUS
EHT
NTC
D.U.
1100
TO MAIN BOARD
SIGNAL INPUT
GND (for UK only)
IN5061X4
TS 711 BF 869
TS 712 BF 869
TS 713 BF 869
TS 121 BC 337-40
TS 132 BUT 11A
TS 152 BT 151
TS 117 BC 547C
T101
SK1
VL101
T2 A
L102
S101
S131
D 131 IN4148
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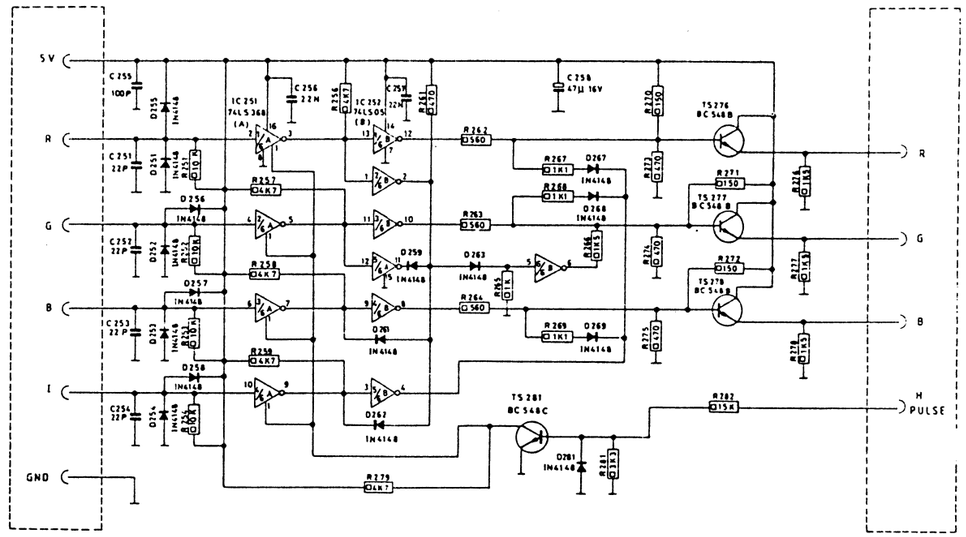
RGP 15K
RGP 10D
RGP 15D
CNX62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G
B
GND
H PULSE
IC251 74LS368 (A)
IC252 74LS05 (B)
TS276 BC548B
TS277 BC548B
TS278 BC548B
TS281 BC548C
IN4148

L VIDEO
L/C/A.
CVBS. 220N
C
AUDIO
EURO. CONNECTOR
TTL RGB
RGBI INTERFACE BOARD
R
G
B
I
GND
H PULSE
5V
12V
RGB
STATUS SWITCH
DETAIL
IC 501 TDA 4510
DL 701
1560
S560
S569
IC 502 TDA 3505
CONTR.
ABL
VCR
IC 302 TDA 2653A
V-HOLD
V. LINEARITY
VERT CENTER
VERT SIZE
H. SIZE
HORI CENTER
IC 402 TDA 2595
IC 301 TDA 2611A
VOLUME
3" 16Ω
IC 401 HEF 4077
IC 403 L7812
SMPS BOARD
CRT BOARD
HEATER 4M6 5M6
EHT
FOCUS
GND 1M7
B 5M7
G 4M7
R 3M7
2M7
1M6 2M6 3M6
1M3 2M3
1M4
1M5
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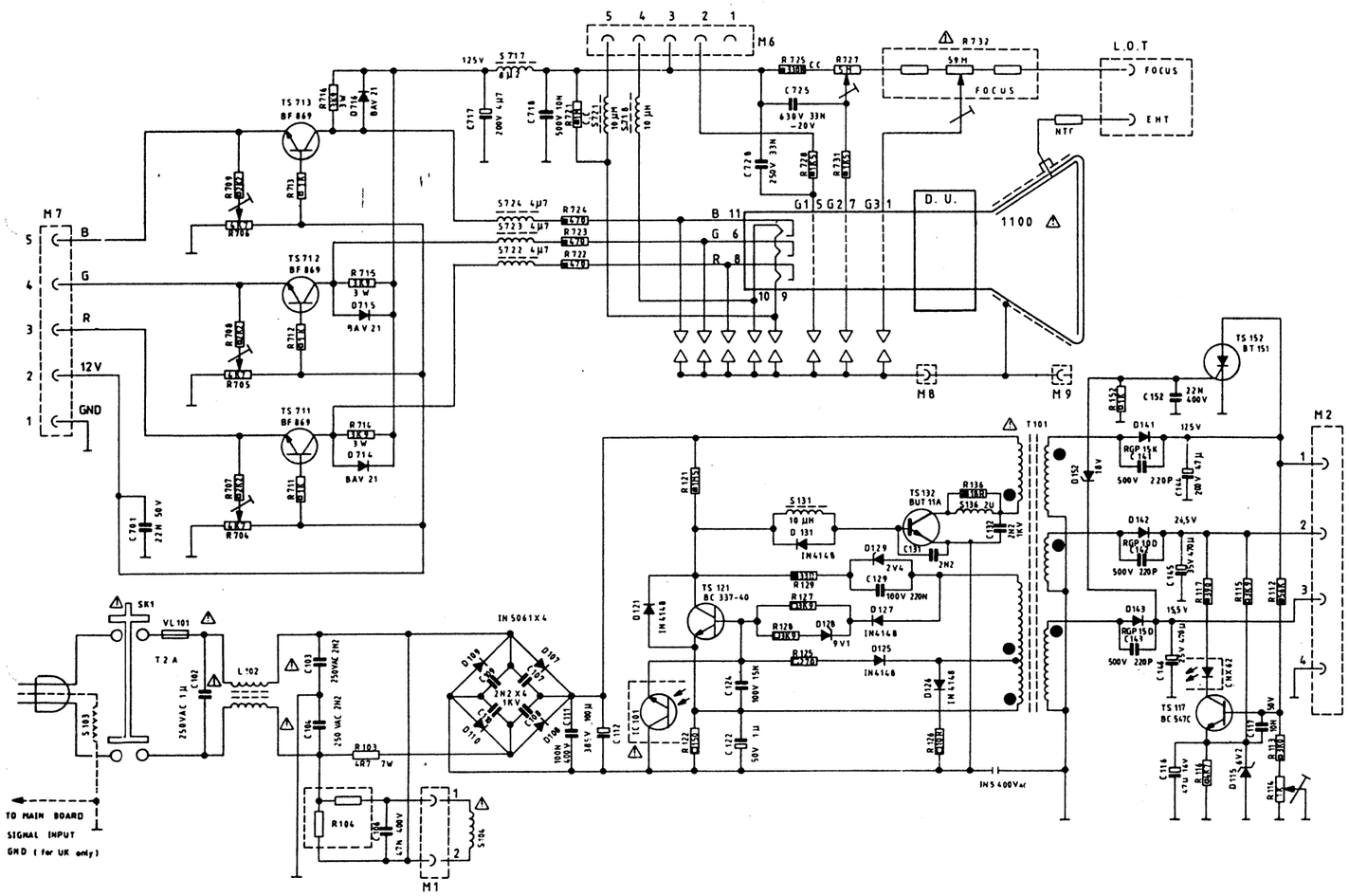
1084
24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G
R
12V
GND
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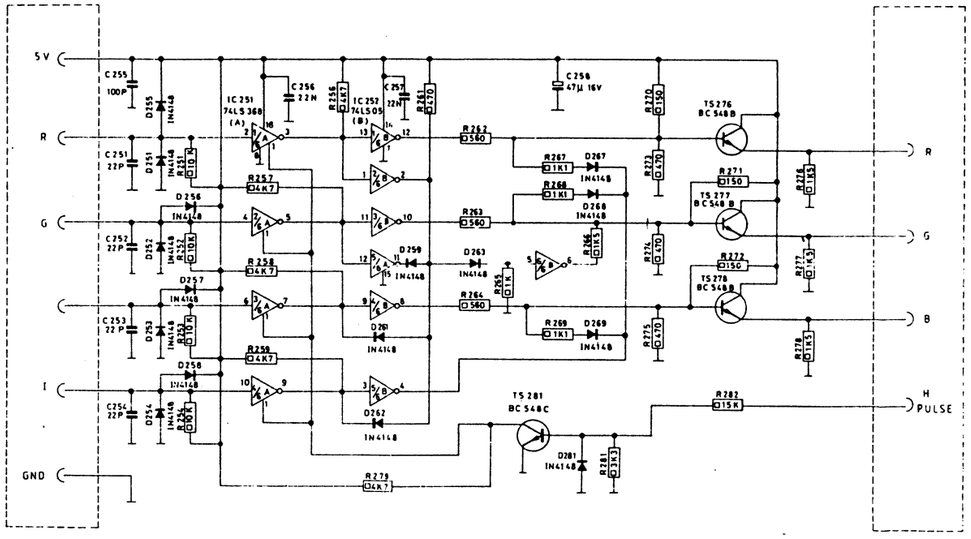
TS 712 BF 869
TS 711 BF 869
D716 BAV 21
D715 9AV 21
D714 BAV 21
R716 3W
R715 3W
R714 3W
R705
R704
C701 22N 50V
125V
S 717 6µT
C717 200V 4µ7
C718 500V 10N
S 721 10µH
S 719 10µH
S 718 10µH
5724 4µ7
5723 4µ7
5722 4µ7
R726
R723
R722
B 11
G 6
R 8
10 9
G1 5 G2 7 G3 1
D. U.
1100
R725 CC 330Ω
R727 5Ω
R732
59M
FOCUS
L.O.T
FOCUS
EHT
NTF
C725 630V 33N -20V
C729 250V 33N
R728 1K5
R731 1K5
TS 152 BT 151
C152 22N 400V
R152 1K5
D141 125V
RGP 15K C141 500V 220P
C144 200V 47µ
D152 18V
D142 24,5V
RGP 10D C142 500V 220P
C145 35V 470µ
D143 15,5V
RGP 15D C143 500V 220P
C134 35V 470µ
R117 1K5
R115 2K2
R112 2K2
TS 117 BC 547C
CNX62
C117 50V
C116 470 16V
R116 1K5
D115 6V2
T101
S 131 10 µH
D 131 IN4148
TS 132 BUT 11A
R136 1R0
S 136 2U
C132 2N2
D129 2V4
C129 100V 220N
C131 2N2
R129 33M
R127 1K5
TS 121 BC 337-40
D128 9V1
D127 IN4148
R128 1K5
D125 IN4148
D124 IN4148
R125 39R
R124 1K5
C124 400V 15N
C122 50V 1µ
R122 150Ω
R121 1K5
D121 IN4148
IC 101
R126 1K5
C112 385V 100µ
IN5400Vac
IN5061X4
D108
D107
D110
D109
2N2 X4 1KV
C108
C107
C110
C109
100N 400V
C111
SK1
VL 101
T 2 A
S 103
C102 250VAC 1µ
L 102
C103 250VAC 2N2
C104 250 VAC 2N2
R103 4R7 7W
R104
C105 400V
C106
S 104
1
2
TO MAIN BOARD
SIGNAL INPUT
GND (for UK only)
M2
1
2
3
4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R
G
B
GND
H PULSE
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C252 22P
C253 22P
C254 22P
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D251 IN4148
D256 IN4148
D252 IN4148
D257 IN4148
D253 IN4148
D258 IN4148
D254 IN4148
R231 10K
R232 10K
R233 10K
R234 10K
R235 10K
IC 251 74LS 368 (A)
IC 252 74LS 05 (B)
C256 22N
C257 22N
R256 5K6
R261 470
R257 4K7
R258 4K7
R259 4K7
R260 4K7
C258 47µ 16V
R120 150
R262 560
R263 560
R264 560
R265 1K
D259 IN4148
D260 IN4148
D261 IN4148
D262 IN4148
D263 IN4148
R267 1K1
R268 1K1
R269 1K1
D267 IN4148
D268 IN4148
D269 IN4148
R273 470
R274 470
R275 470
R266 1K5
TS 276 BC 548 B
TS 277 BC 548 B
TS 278 BC 548 B
R271 150
R272 150
R276 150
R277 1K5
R278 1K5
R226 1K5
TS 281 BC 548 C
R282 15K
R279 4K7
D281 IN4148
R281 3K3

1084S-Philips Spare Parts List

Items preceded with a C are Commodore Stocked.
All other items are local purchase.

CBM P/No		Part Description	Vendor P/No
314851-01	C	CABLE (6 TO 23) 1084	
314890-01	C	MANUAL SERVICE 1084S-P NTSC	
314891-01	C	KIT, 1084S-P REPAIR	
314892-01		LINE OUTPUT TRANS T402 (IN KIT)	
314893-01		RESISTOR 15K, 2W R475 (IN KIT)	
314894-01		CAP .047 UF MYLAR C476(IN KIT)	
314895-01		WIRE PVC ORG 24 AWG (IN KIT)	
314896-01		CAP .0056 UF 50V CER (IN KIT)	
314897-01		CAP .022 UF 50V CER (IN KIT)	
314898-01		INSTRUCTIONS (IN KIT)	
602200-00A		1084-P COLOR MONITOR UL/CSA	
602200-00C		1084-P COLOR MONITOR VDE	
602200-00D		1084-P COLOR MONITOR BSI	
602200-00E		1084-P COLOR MONITOR AUST	
602200-00J		1084S-P COLOR MONITOR UL/CSA	
602200-00L		1084S-P COLOR MONITOR VDE	
602200-00M		1084S-P COLOR MONITOR BSI	
602200-00N		1084-P COLOR MONITOR AUST	
602200-01		PAD	4822 462 40831
602200-02		CABINET (VDE)	4822 430 70486
602200-03	C	CABINET (UL) - CM8562	4822 701 10567
602200-04		CABINET (OTHERS)	4822 430 70487
602200-05		COVER (VDE)	4822 432 92169
602200-06	C	COVER (UL)	4822 701 10568
602200-07		COVER (OTHERS)	4822 432 92171
602200-08		PUSH BUTTON POWER	4822 410 25227
602200-09		PAD	4822 466 61104
602200-10		ADJUST ROD	4822 535 91695
602200-11		KNOB PUSH BUTTON	4822 410 24176
602200-12		KNOB PUSH BUTTON	4822 413 10242
602200-13		SUPPORT	4822 404 30741
602200-14		CABLET EHT	4822 320 20134
602200-15		HGH VOLTAGE CABLE	4822 320 20133
602200-16		FOCUS CABLE (OTHERS)	4822 320 20127
602200-17		FOCUS CABLE (UL)	4822 320 20219
602200-18		FOCUS CAP	4822 462 40794
602200-19		DIRECT FOR USE DFU 1084 OTHERS	4822 736 51268
602200-20		DIRECT FOR USE DFU 1084 UL	4822 701 10566
602200-21		TUBE ELECTRON 1084 OTHERS	4822 131 20147
602200-22	C	TUBE ELECTRON 1084 UL B100	4822 131 20149
602200-23		TUBE PICTURE 2080 UL	4822 131 20247
602200-24		COIL DEGAUSSING OTHERS	4822 157 52254
602200-25	C	COIL DEGAUSSING UL S104	4822 157 52274
602200-26		BRACKET/HOLDER	4822 404 30817
602200-27		RES METAL FILM 3K3-1W	4822 116 53663
602200-28	C	POWER SWITCH SK1	4822 276 11504
602200-29		COIL 500-1000MUH	4822 156 21359
602200-30		BOARD PRINTED POWER SUPPLY	4822 212 22597
602200-31		UNIT POWER SUPPLY	4822 701 10569
602200-32		HOLDER, SPRING FOR USE	4822 492 60063

1084S-Philips Spare Parts List

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CBM P/No		Part Description	Vendor P/No
602200-33		COIL FOR POWER SUPPLY	4822 156 70063
602200-34		CONNECTOR 4POLE	4822 265 30408
602200-35		SOCKET 2POLE	4822 267 40646
602200-36		FUSE OTHERS 2AT-250V	4822 253 30025
602200-37		FUSE UL 3A-250V	4822 253 30175
602200-38		CAP, FOIL OTHERS 1MUF-25V	5322 121 44212
602200-39		CAP, FOIL UL 220NF-125V	4822 121 42452
602200-40		CAP, CERAMIC 2N2-400V OTHERS	4822 122 32576
602200-41		CAP, CERAMIC 4NT-125V UL	4822 122 32553
602200-42		CAP, CERAMIC 2N2-1KV	4822 122 40348
602200-43		CAP, ELECTROLYT, 100UF-305V	4822 124 21722
602200-44		CAP, 220UF-200V	4822 124 10531
602200-15		CAP, FOIL 13NF-100V	4822 121 51031
602200-46		CAP, 2N2-1KV	4822 121 50966
602200-47		CAP, FOIL 4N7-630V	4822 121 40337
602200-48		CAP, CERAMIC 230PF-500V	4822 122 32575
602200-49		CAP, ELECTROLYT, 47MUF-200V	4822 124 41281
602200-50		RES, WIREWOUND 4R7-7W	4822 113 80358
602200-51		RES, WIREWOUND 2R2-7W	4822 113 80361
602200-52		RES, METAL FILM PTC	4822 116 40079
602200-53	C	RES, PTC DUAL R104	4822 116 40035
602200-54		POTM TRIMMER 1K-POTM	4822 100 10037
602200-53		RES, HI-TENSION VR37-1M5	4822 110 42192
602200-56		RES, CARBON 390K-VR37	4822 116 53125
602200-57		RES, METAL FILM 22K-2W	4822 116 53163
602200-58		POWER TRANSFORMER OTHERS	4822 142 60381
602200-59	C	POWER TRANSFORMER UL T101	4822 142 60379
602200-60	C	LINE CHOKE COIL AC S102	4822 157 52228
602200-61		COIL 10MUH	4822 157 52233
602200-62		COIL CHOKE 3MUH	4822 242 71344
602200-63		DIODE IN5061 OTHERS	4822 130 31933
602200-64		DIODE GP15J UL	4822 130 33887
602200-65		DIODE REFERENCE BZX79024V	4822 130 34398
602200-66		DIODE REFERENCE BZX79B6V2	4822 130 34167
602200-67		DIODE IN4148	4822 130 30621
602200-68		DIODE REFERENCE BZX79C9V1	4822 130 30862
602200-69		DIODE REFERENCE 2V4	4822 130 31253
602200-70		DIODE RGP10J	4822 130 31393
602200-71		DIODE RGP15X	4822 130 32833
602200-72		DIODE POWER RGP10D	4822 130 31607
602200-73		DIODE RGP15D	4822 130 31971
602200-74		DIODE REFERENCE BZX7918	4822 130 31024
602200-75		DIODE REFERENCE BZX79020 UL	4822 130 34499
602200-76	C	COUPLER, PHOTO CNX62 IC101	4822 130 90121
602200-77		TRANSISTOR BC547C	4822 130 44503
602200-78		TRANSISTOR BC337-40	4822 130 41344
602200-79		THYRISTOR BT151-500	5322 130 24061
602200-80		TRANSISTOR BUT11A	5323 130 42087
602200-81		TRANSISTOR BU806	4822 130 42698
602200-82		BOARD PRINTED PICTURE TUBE PAN	4822 212 22596

1084S-Philips Spare Parts List

Items preceded with a C are Commodore Stocked.
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CBM P/No		Part Description	Vendor P/No
602200-83		PLUG 5POLE MICRO	4822 267 40594
602200-84		PLUG 5 POLE	4822 265 30376
602200-85	C	CRT SOCKET	4822 255 70217
602200-86		CAP. ELEC. 4MU7-2000	4822 124 22023
602200-87		CAP. FOIL 10NF-500V	4822 121 42191
602200-88		POTM TRAINER 4K7-POTM	4822 100 10236
602200-89		RES. MET. OXIDE 3K9-3W	4822 116 60241
602200-90		RES. METAL FILM 1ME-C.5W	4822 116 52493
602200-91		RES. METAL FILM 470E-1/2W	4822 116 52425
602200-92		RES. METAL FILM 330M-1/2W	4822 116 52518
602200-93		POTM. 5ME-POTM	4822 100 10869
602200-94		RES. METAL FILM 1K5-1/2W	4822 116 52399
602200-95	C	POTM. 59M-FOCUS POTM R732	4822 101 20821
602200-96		COIL CHOKE 8MU2	4822 152 20627
602200-97		COIL 10MU	4822 157 52233
602200-98		COIL 4MU7	4822 152 20596
602200-99		DIODE BAV21	4822 130 30842
602201-00	C	TRANSISTOR BF869 TS711	4822 130 41773
602201-01		MICRO CONNECTOR 2 POLE	4822 267 30636
602201-02		LED CQW11B GREEN	4822 130 42242
602201-03		CONNECTOR 2 POLE	4822 267 30637
602201-04		EARPHONE SOCKET	4822 267 10106
602201-05		LOUDSPEAKER 3MCH	4822 240 30296
602201-06		SWITCH INVERSE	4822 276 11505
602201-07		SOCKET RCA JACK	4822 267 40755
602201-08		8 POLE DIN SOCKET	4822 264 50154
602201-09		6 POLE DIN SOCKET	4822 264 40211
602201-10		21 POLE SCART SOCKET	4822 267 60159
602201-11		4 POLE CONNECTOR	4822 265 30375
602201-12		CABLE CONNECT 5POLE MICRO	4822 321 21177
602201-13		PLUG 2POLE MICRO CONNECT	4822 265 20235
602201-14		CABLE CONNECTOR	4822 321 21278
602201-15		CABLE CONNECTOR 4POLE	4822 321 21179
602201-16		CONNECTOR	4822 267 20277
602201-17		LINE DELAY PL701 64 USEC	4822 320 40096
602201-18		CRYSTAL 8.86MHZ	4822 242 70304
602201-19		CRYSTAL 7.159090MHZ	4822 242 71284
602201-20		CAP. ELECT. 22MUF-35V	4822 124 40434
602201-21		CAP. ELECT. 1000MUF-25V	4822 124 22016
602201-22		CAP. ELECT. 10MUF-50V	4822 124 40435
602201-23		CAP. ELECT. 100MUF-35V	5322 124 21389
602201-24		CAP. ELECT. 2MU2-16V	4822 124 41446
602201-25		CAP. ELECT. 10MUF-25V	4822 124 22058
602201-26		CAP. CERAMIC 10NF-50V	4822 122 30043
602201-27		CAP. CERAMIC 22NF-50V	4822 122 30043
602201-28		CAP. CERAMIC 1NF-50V	4822 124 40242
602201-29		CAP. CERAMIC 10NF-50V	4822 122 40267
602201-30		CAP. FOIL 27PF-500V	4822 121 42607
602201-31	C	CAP. FOIL 8N2-1500V C467	4822 121 43061
602201-32	C	CAP. FOIL 22NF-400V C468	4822 121 20237

1084S-Philips Spare Parts List

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CBM P/No	Part Description	Vendor P/No
602201-33	CAP. CERAMIC 40PF-2KV	4822 122 40427
602201-34	CAP. FOIL 470NF-25V	4822 121 51169
602201-35	CAP. 4MU7-50V	4822 124 90034
602201-36	CAP. CERAMIC 470PF-500V	4822 122 32577
602201-37	CAP. ELECT. 22MUF-35V	4822 124 40434
602201-38	CAP. ELECT. 100UF-35V	5322 124 21389
602201-39	CAP. ELECT. 47MUF-200V	4822 124 41281
602201-40	CAP. ELECT. 47UF-16V	4822 124 22576
602201-41	CAP. ELECT. 1U5-63V	4822 124 22575
602201-42	CAP. ELECT. 100MUF-25V	4822 124 22058
602201-43	CAP. CERAMIC 12PF-50V	4822 122 40383
602201-44	CAP. ELECT. 47MUF-16V	4822 124 22056
602201-45	CAP. ELECT. 22MUF-16V	4822 124 40741
602201-46	CAP. CERAMIC 680PF-50V	4822 122 40609
602201-47	CAP. CERAMIC 22NF-50V	4822 122 10258
602201-48	CAP. TRIMMER 27PF	4822 125 50088
602201-49	RES. SAFETY 4R7-SAFETY	4822 111 30499
602201-50	RES. SAFETY 15R-SAFETY	4822 111 30513
602201-51	POTM 100K	4822 100 30054
602201-53	POTM TRIMMER 47K-POTM	4822 100 10079
602201-54	POTM TRIMMER 100K-POTM	4822 100 10052
602201-55	RES. METAL FILM 4R7-NFR30	4822 116 52448
602201-56	POTM 220E-POTM	4822 100 10915
602201-57	POTM 10K-POTM	4822 101 10547
602201-58	POTM TRIMMER 22K-POTM	5322 101 44041
602201-59	RES. METAL FILM 12K-MF25	4822 116 80287
602201-60	RES. SAFETY BR2 SAFETY	4822 111 30506
602201-61	POTM. 10K-POTM	4822 100 30053
602201-62	RES. SAFETY 100R-SAFETY	4822 111 30535
602201-63	POTM. CARB TRACK 22K-POTM	4822 100 20147
602201-64	RES. METAL FILM 1K-2W	4822 116 60239
602201-65	RES. METAL FILM 3R3-2W	4822 116 60231
602201-66	RES. W.W. ADJ. 12R-5W	4822 113 80378
602201-67	RES. SAFETY 5R6-SAFETY	4822 111 30502
602201-68	RES. METAL FILM 3K3-1W	4822 116 53663
602201-69	RES. METAL FILM 12K	4822 116 80664
602201-70	RES. SAFETY 1R5-SAFETY	4822 111 30487
602201-71	POTM. TRIMMER 4K7-POTM	4822 100 10236
602201-72	RES. METAL FILM 1K5	4822 116 80659
602201-73	POTM. 500R	4822 100 20146
602201-74	POTM. 10P	4822 100 20518
602201-75	POTM. TRIMMER 220R	4822 100 10019
602201-76	POTM. TRIMMER 10K	4822 100 10024
602201-77	RES. METAL FILM 120R	4822 116 80663
602201-78	RES. METAL FILM 33R	4822 116 80665
602201-79	RES. METAL FILM 820R	4822 116 80666
602201-80	POTM. TRIMMER 1K	4822 100 10021
602201-81	RES. METAL FILM 2K7-MR825	4822 116 52918
602201-82	RES. METEL FILM 1K5-MRS25	5322 116 53478
602201-83	RES. METAL FILM 680R-2W	4822 116 60236

1084S-Philips Spare Parts List

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CBM P/No		Part Description	Vendor P/No
602201-84		POTM. TRIMMER 10P	4822 100 10024
602201-85	C	HORIZONTAL DRIVER TRANS T401	4822 146 21263
602201-86	C	OUTPUT TRANSFORMER T402	4822 140 10275
602201-87		COIL CHOKE 7MUS	4822 152 20587
602201-88		COIL LINEARITY	4822 157 52236
602201-89		COIL 720MUH	4822 157 53122
602201-90		COIL470MUH	4822 157 52237
602201-91		COIL 100MUH	4822 157 52234
602201-92		COIL CHOKE 120MUH	4822 157 20629
602201-93		COIL 100MUH	4822 157 52234
602201-94		COIL 4.43MHZ	4822 156 70064
602201-95		DELAY LINE 330 NSEC	4822 157 51056
602201-96		COIL 6MU8	4822 157 52494
602201-97		COIL 27MUH	4822 157 52697
602201-98		COIL	4822 156 70063
602201-99		COIL CHOKE 2MU2	4822 152 20626
602202-00		COIL 1MUS	4822 157 52492
602202-01		DIODE IN4003	4822 130 31878
602202-02		DIODE REFERENCE BZX79C4V7	4822 130 34174
602202-03		DIODE BAV21	4822 130 30842
602202-04		DIODE BZX79F18	4822 130 80234
602202-05		DIODE BY448	5322 130 31559
602202-06		DIODE BYV9SC	4822 130 41487
602202-07		TRANSISTOR BC548D	4822 130 40937
602202-08		TRANSISTOR BC329	4822 130 44104
602202-09		TRANSISTOR BD226	5322 130 44244
602202-10	C	IC TDA2611AQ IC301	4822 209 80444
602202-11	C	IC TDA2653A IC302	5322 209 82945
602202-12		TRANSISTOR BC558B	4822 130 44197
602202-13		IC HEF4077BP	4822 209 10223
602202-14	C	IC TDA2595/V4 IC401	4822 209 72155
602202-15		IC 27812CV	5322 209 86176
602202-16		TRANSISTOR BC548C	4822 130 44196
602202-17		THYRISTOR BT149F	4822 130 20183
602202-18	C	TRANSISTOR BC639 TS461	4822 130 41053
602202-19		TRANSISTOR BU508A	4822 130 60263
602202-20		TRANSISTOR BD826	4822 130 41774
602202-21		IC TD451C/V2	4822 209 70019
602202-22	C	IC TIA4570 IC501	4822 209 71398
602202-23	C	IC TDA3505/V4 IC502	4822 209 71971
602202-24		TRANSISTOR PH2369	4822 130 41594
602202-25		TRANSISTOR BC638	4822 130 41087
602202-26		PRINTED CIRCUIT FOR RGB I/F	5322 209 84994
602202-27		IC 74LS368AN	4822 209 81433
602202-28		IC 74LS05	5322 209 84994

NAPCEC SAFETY GUIDELINES FOR THE PROFESSIONAL SERVICE TECHNICIAN

Safety Checks

After the original service problem has been corrected, a complete safety check should be made. Be sure to check over the entire set, not just the areas where you have worked. Some previous servicer may have left an unsafe condition, which could be unknowingly passed on to your customer. Be sure to check all of the following:

Fire and Shock Hazard

1. Be sure all components are positioned in such as way as to avoid the possibility of adjacent component shorts. This is especially important on those chassis which are transported to and from the service shop.
2. Never release a repaired receiver unless all protective devices such as insulators, barriers, covers, strain reliefs, and other hardware have been installed according to the original design.
3. Soldering and wiring must be inspected to locate possible cold solder joints, solder splashes, sharp solder points, frayed leads, pinched leads, or damaged insulation (including ac cord). Be certain to remove loose solder balls and all other loose foreign particles.
4. Check across-the-line components and other components for physical evidence of damage or deterioration and replace if necessary. Follow original layout, lead length and dress.
5. No lead or component should touch a receiving tube or a resistor rated at 1 watt or more. Lead tension around protruding metal surfaces or edges must be avoided.
6. Critical components having special safety characteristics are identified with an S by the Ref. No. in the parts list and enclosed within a broken line* along with the safety symbol ⚠ on the schematics. Replacement parts without the same safety characteristics may create shock, fire or other hazards.
7. When servicing any receiver, always use a separate isolation transformer for the chassis. Failure to use a separate isolation transformer may expose you to possible shock hazard, and may cause damage to servicing instruments.
8. Many receivers use a polarized line cord (one wide pin on the plug). Defeating this safety device may create a potential hazard to the servicer and the user. Extension cords which do not incorporate the polarizing feature should never be used.
9. After re-assembly of the set, always perform an ac leakage test or resistance test from the line cord to all exposed metal parts of the cabinet. Also, check all metal control shafts (with knobs removed), antenna terminals, handles, screws, etc. to be sure the set is safe to operate without danger of electrical shock.

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Implosion

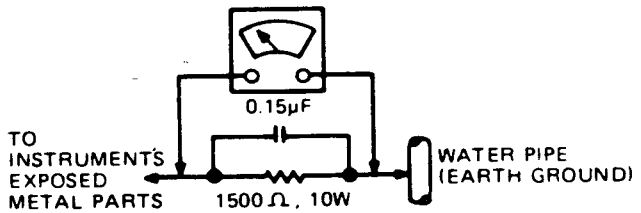
1. All picture tubes used in current model receivers are equipped with an integral implosion system.
   Care should always be used, and safety glasses worn, whenever handling any picture tube. Avoid scratching or otherwise damaging the picture tube during installation.
2. Use only replacement tubes as specified by the manufacturer.

X-radiation

1. Be sure procedures and instructions to all your service personnel cover the subject of X-radiation. Potential sources of X-rays in TV receivers are the picture tube and the high voltage circuits. The basic precaution which must be exercised is to keep the HV at the factory recommended level.
2. To avoid possible exposure to X-radiation and electrical shock, only the manufacturer's specified anode connectors must be used.
3. It is essential that the service technician has available at all times an accurate HV meter. The calibration of this meter should be checked periodically against a reference standard.
4. When the HV circuitry is operating properly there is no possibility of an X-radiation problem. High voltage should always be kept at the manufacturer's rated value — no higher — for optimum performance. Every time a color set is serviced, the brightness should be run up and down while monitoring the HV with a meter to be certain that the HV does not exceed the specified value and that it is regulated correctly.
   We suggest that you and your service technicians review test procedures so that HV and HV regulation are always checked as a standard servicing procedure, and the reason for this prudent routine be clearly understood by everyone. It is important to use an accurate and reliable HV meter. It is recommended that the HV reading be recorded on each customers' invoice, which will demonstrate a proper concern for the customers' safety
5. When troubleshooting and making test measurements in a receiver with a problem of excessive high voltage, reduce the line voltage by means of a Variac to bring the HV into acceptable limits while trouble shooting. Do not operate the chassis longer than necessary to locate the cause of the excessive HV.
6. New type picture tubes are specifically designed to withstand higher operating voltages without creating undesirable X-radiation. It is strongly recommended that any shop test fixture which is to be used with the new higher voltage chassis be equipped with one of the new type tubes designed for this service. Addition of a permanently connected HV meter to the shop test fixture is advisable. The CRT types used in these new sets should never be replaced with any other types, as this may result in excessive X-radiation.
7. It is essential to use the specified picture tube to avoid a possible X-radiation problem.
8. Most TV receivers contain some type of emergency "Hold Down" circuit to prevent HV from rising to excessive levels in the presence of a failure mode. These various circuits should be understood by all technicians servicing them, especially since many hold down circuits are inoperative as long as the receiver performs normally.

Leakage Current Cold Check

1. Unplug the ac line cord and connect a jumper between the two prongs of the plug.
2. Turn on the power switch.
3. Measure the resistance value between the jumpered ac plug and all exposed cabinet parts of the receiver, such as screw heads, antennas and control shafts. When the exposed metallic part has a return path to the chassis, the reading should be between 1 megohm and 5.2 megohms. When the exposed metal does not have a return path to the chassis, the reading must be infinity. Remove the jumper from the ac line cord.



Leakage Current Hot Check

1. Do not use an isolation transformer for this test. Plug the completely re-assembled receiver directly into the ac outlet.
2. Connect a 1.5k ohm, 10 watt resistor paralleled by a 0.15uF. capacitor between each exposed metallic cabinet part and a good earth ground such as a water pipe, as shown above.
3. Use an ac voltmeter with at least 5000 ohms/volt sensitivity to measure the potential across the resistor.
4. The potential at any point should not exceed 0.75 volts. A leakage current tester may be used to make this test; leakage current must not exceed 0.5 milliamps. If a measurement is outside the limits specified, there is a possibility of shock hazard. The receiver should be repaired and re-checked before returning it to the customer.
5. Repeat the above procedure with the ac plug reversed. (Note: An ac adapter is necessary when a polarized plug is used. Do not defeat the polarizing feature of the plug.)

Picture Tube Replacement

The primary source of X-radiation in this television receiver is the picture tube. The picture tube utilized in this chassis is specially constructed to limit X-radiation emissions. For continued X-radiation protection, the replacement tube must be the same type as the original, including suffix letter, or an N.A.P. Consumer Electronics Corp. (NAPCEC) approved type.

Parts Replacement

Many electrical and mechanical parts in NAPCEC television sets have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. The use of a substitute part which does not have the same safety characteristics as the NAPCEC recommended replacement part shown in this service manual may create shock, fire or other hazards.

1084S-Philips Spare Parts List

Items preceded with a C are Commodore Stocked.
All other items are local purchase.

CBM P/No		Part Description	Vendor P/No
602201-84		POTM. TRIMMER 10P	4822 100 10024
602201-85	C	HORIZONTAL DRIVER TRANS T401	4822 146 21263
602201-86	C	OUTPUT TRANSFORMER T402	4822 140 10275
602201-87		COIL CHOKE 7MUS	4822 152 20587
602201-88		COIL LINEARITY	4822 157 52236
602201-89		COIL 720MUH	4822 157 53122
602201-90		COIL470MUH	4822 157 52237
602201-91		COIL 100MUH	4822 157 52234
602201-92		COIL CHOKE 120MUH	4822 157 20629
602201-93		COIL 100MUH	4822 157 52234
602201-94		COIL 4.43MHZ	4822 156 70064
602201-95		DELAY LINE 330 NSEC	4822 157 51056
602201-96		COIL 6MU8	4822 157 52494
602201-97		COIL 27MUH	4822 157 52697
602201-98		COIL	4822 156 70063
602201-99		COIL CHOKE 2MU2	4822 152 20626
602202-00		COIL 1MUS	4822 157 52492
602202-01		DIODE IN4003	4822 130 31878
602202-02		DIODE REFERENCE BZX79C4V7	4822 130 34174
602202-03		DIODE BAV21	4822 130 30842
602202-04		DIODE BZX79F18	4822 130 80234
602202-05		DIODE BY448	5322 130 31559
602202-06		DIODE BYV9SC	4822 130 41487
602202-07		TRANSISTOR BC548D	4822 130 40937
602202-08		TRANSISTOR BC329	4822 130 44104
602202-09		TRANSISTOR BD226	5322 130 44244
602202-10	C	IC TDA2611AQ IC301	4822 209 80444
602202-11	C	IC TDA2653A IC302	5322 209 82945
602202-12		TRANSISTOR BC558B	4822 130 44197
602202-13		IC HEF4077BP	4822 209 10223
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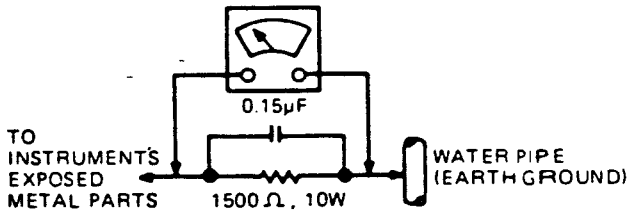

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